



UNIVERSIDADE CATÓLICA PORTUGUESA

Mergers & Acquisitions: Portucel and Suzano Papel e Celulose

Master Thesis

Vitor Oliveira
Advisor: Peter Tsvetkov

September 2014

Dissertation submitted in partial fulfillment of the requirements for the degree of MSc in Business Administration, with Major in Corporate Finance and Control at Universidade Católica Portuguesa

Acknowledgments

I would like to thank, in first place, to all his CLSBE teachers throughout the master, for their commitment in my continuous development. Secondly, I must thank the seminar advisor, Peter Tsvetkov, for its insightful comments on this thesis as well as for being constantly available, even throughout the summer. Also to my family, who have supported me through my life and were the main contributors to the little I've achieved. Many thanks to all my good friends and to Pedro Gancho and Ana Simões in particular. And finally, to Mariana, for being my best friend.

Abstract

The pulp and paper industry is, nowadays, facing challenges associated with the lack of demand growth, pushing firms to adapt to intense competition and industry-wide overcapacity. In order to remain profitable and achieve sustainable competitive positions, industry players have relied on M&A to achieve scale and expand into growing markets in emerging countries. The industry concentration conducted through mergers has been able to deliver value to shareholders while changing the overall competitive landscape.

This dissertation's goal is to propose a merger between Suzano Papel e Celulose and Portucel. The proposition is supported by a review of the main literature on M&A, a thorough industry and company analysis, and a valuation of each individual firm and its combination.

It is concluded that Suzano should acquire Portucel in an all-stock offer, valuing the Portuguese firm at €4.32, a premium of 55% over its 31 December 2013 market capitalization. Through the proposed takeover offer, Portucel would be entitled to 46% of the merged firm, with the remaining 54% allocated to Suzano's shareholders.

Table of Contents

1. Introduction	8
2. Literature Review	9
2.1. Recent trends in M&A	9
2.1.1. Cyclicalit y	9
2.1.2. Which stage of the cycle? M&A market in 2014- 2015	10
2.1.3. Cross-border M&A activity	11
2.2. Valuation Models	11
2.2.1. Cost of capital estimation.....	12
2.2.1.1. Risk-free rate (rf)	12
2.2.1.2. Market Beta (β)	12
2.2.1.3. Market Risk Premium ($R_m - R_f$)	13
2.2.1.4. The cost of equity in emerging markets.....	14
2.2.1.5. Weighted Average Cost of Capital (WACC)	16
2.2.2. Dividend Discount Model.....	17
2.2.3. Adjusted Present Value (APV)	18
2.2.5. Relative Valuation	20
2.2.5.1. The Multiples Puzzle.....	21
2.2.6. Conclusion	22
2.3. M&A-related topics	22
2.3.1. Return for shareholders	22
2.3.2. Method of payment	23
2.2.3. Synergies	23
2.2.3.1. Operating Sense of Synergies	24
2.2.3.2. Shareholders Value at Risk (SVAR)	24
3. Industry Review	27
3.1. Supply analysis	27
3.1.1. Introduction	27
3.1.2. Industry Mergers & Acquisitions	27
3.1.3. Business Segments	27
3.1.3. Industry Consolidation	28

3.2. Demand analysis	29
3.2.1. Printing & Writing paper: trends and forecasts	29
3.2.2. Demand shift to environmental-friendly products	30
3.2.3. Country economic development and paper consumption growth	30
4. Company Review	31
4.1. Suzano Papel e Celulose	31
4.1.1. Revenues	32
4.1.1.1. Paper Segment	32
4.1.1.1.1. Revenues.....	32
4.1.1.1.2. Production, Sales Volume and Capacity	33
4.1.1.1.3. Positioning in Brazil.....	33
4.1.1.2. Pulp Segment.....	34
4.1.1.2.1. Revenues.....	35
4.1.1.2.2. Production, Sales Volume and Capacity	35
4.1.1.2.3. Geographic Segment	36
4.1.2. Costs	37
4.1.2.1. COGS	37
4.1.2.2. Operating Costs	38
4.1.2.2.1. Sales Expenses	38
4.1.2.2.2. General and Administrative Expenses	38
4.1.3. EBITDA	39
4.1.4. CAPEX	40
4.1.5. Working Capital	41
4.1.6. Debt	42
4.2. Portucel	42
4.2.1. Revenues	42
4.2.1.1. Revenue by product	43
4.2.1.1.1. Paper.....	44
4.2.1.1.2. Paper Revenues by market segment	44
4.2.1.1.3. Pulp	45
4.2.1.1.4. Revenue by geographic segment.....	46

4.2.1.1.5. International Expansion.....	46
4.2.2. Costs	47
4.2.2.1. Costs by nature.....	47
4.2.3. Operational Profit.....	48
4.2.4. Capital Expenditures	50
4.2.5. Net Working Capital	50
4.2.6. Interest-bearing liabilities	51
5. Forecasts	52
5.1. Pulp and Paper Index Prices Forecasts.....	54
5.2. Portucel – Forecasts	54
5.2.1. Energy Revenues	54
5.2.2. Operational Costs	55
5.2.3. CAPEX	56
5.2.4. Depreciations	57
5.2.5. Working Capital	57
5.2.6. Debt	57
5.2.7. Dividends	57
5.3. Suzano – Forecasts	58
5.3.1. Revenues	58
5.3.2. Operational Costs	59
5.3.3. CAPEX	60
5.3.4. Depreciations	60
5.3.5. Working Capital	61
5.3.6. Debt and interest.....	62
5.2.7. Dividends.....	63
6. Rationale for the proposed transaction	63
7. Standalone Valuation	66
7.1. Pro-forma financial statements	66
7.1.1. Portucel	66
7.1.2. Suzano	67
7.2. Cost of Capital	68
7.3. Valuation Models	70
7.3.1. Portucel	70
7.3.1.1. DCF.....	70

7.3.1.2. Dividend Discount Model	71
7.3.1.3. Sensitivity Analysis.....	72
7.3.2. Suzano	73
7.3.2.1. DCF.....	74
7.3.2.2. APV	75
7.3.2.3. Sensitivity Analysis.....	75
8. Recent comparable M&A deals.....	76
9. The Merger	77
9.1. Valuation without Synergies	77
9.2. Synergies	78
9.2.1. Cost Synergies	78
9.2.2. Revenue Synergies	80
9.2.3. Financial Synergies	81
9.3. Integration Costs	83
9.4. Valuation of the merged firm.....	83
9.4.1. Synergy Valuation	84
9.4.2. Valuation accounting for the new project	85
9.4.3. Operating sense of synergies	85
9.5. The acquisition	86
9.5.1. Bidder and target definition	86
9.5.2. Distribution of the synergies	86
9.5.3. Method of payment	87
9.5.4. Takeover offer	88
9.5.5. SVAR	89
9.5.6. Other Potential Bidders.....	89
9.5.7. Execution Risk.....	90
10. Conclusion.....	91
11. Appendix.....	92
12. Bibliography.....	95

List of Figures

FIGURE 1: GLOBAL M&A VOLUME, BY YEAR.

FIGURE 2: GLOBAL M&A BY SECTOR, 2014.

FIGURE 3: ENTERPRISE VALUE AND EBITA ADJUSTMENTS

FIGURE 4: MEET THE PREMIUM LINE

FIGURE 5: CAPABILITIES/MARKET ACCESS FRAMEWORK.

FIGURE 6: PULP AND PAPER INDEX PRICES

FIGURE 7: NUMBER OF MILLS AND TOTAL PULP PRODUCTION VOLUME IN EUROPE

FIGURE 8: DEMAND OF PRINTING & WRITING PAPER BY REGION IN VOLUME

FIGURE 9: PER CAPITA CONSUMPTION OF TISSUE PAPER

FIGURE 10: TOTAL REVENUES

FIGURE 11: INTEGRATED PAPER REVENUES

FIGURE 12: PAPER PRODUCTION, SALES AND CAPACITY IN VOLUME

FIGURE 13: MARKET SHARE IN BRAZIL BY SEGMENT

FIGURE 14: TOP 10 PULP PRODUCERS

FIGURE 15: PULP REVENUES

FIGURE 16: PULP PRODUCTION, SALES AND CAPACITY IN VOLUME

FIGURE 17: PULP SALES BY GEOGRAPHIC SEGMENT

FIGURE 18: COGS

FIGURE 19: SALES EXPENSES

FIGURE 20: GENERAL AND ADMINISTRATIVE EXPENSES

FIGURE 21: EBITDA

FIGURE 22: CAPITAL EXPENDITURES

FIGURE 23: INTEREST-BEARING LIABILITIES

FIGURE 24: TOTAL REVENUES

FIGURE 25: INTEGRATED PULP AND PAPER REVENUES

FIGURE 26: PAPER REVENUES BY MARKET SEGMENT

FIGURE 27: PULP REVENUES AND PULP PRICE INDEX

FIGURE 28: TOTAL OPERATIONAL COSTS

FIGURE 29: EBITDA, DEPRECIATIONS AND EBIT

FIGURE 30: OPERATIONAL PROFIT BY PRODUCT SEGMENT

FIGURE 31: CAPITAL EXPENDITURES

FIGURE 32: TOTAL INTEREST-BEARING LIABILITIES

FIGURE 33: PAPER, PULP AND MSCI WORLD INDEX

1. Introduction

In the online era we live in, where a rapid shift from paper to digital based content is observed, the paper industry is on the verge of reaching the decline stage. As the industry is highly correlated with economic environment, the global economic and financial crisis of 2008 has spurred a wave of bankruptcies, due to industry overcapacity and high leverage levels. Indeed, the structural problems the industry suffered due to stagnant or decreasing demand were deeply aggravated by the crisis. An industry restructuring phase ensued, which has lasted through to today. While some firms are able to be profitable and have sustainable leverage levels, others struggle to compete in current market conditions. Indeed, over the last years it has been proven that firms with industrial efficiency and scale struggle to be profitable, which has led to intense M&A activity in the industry, primarily to concentrate supply. Additionally, firms based in Europe and North America seek to expand to markets where growth rates are more attractive, typically in emerging countries, and often do so through acquisitions.

Suzano Papel e Celulose and Portucel, the two companies under scrutiny in this thesis, are part of and influenced by the abovementioned industry trends. Albeit quite distinct, the two firms share a few common characteristics: both have a strong regional presence in the paper industry and a global reach in their pulp segment and both are entering a new stage of their lifecycle. Suzano, a Brazilian based company, has plenty opportunities to expand organically but is unable to source the capital required to pursue those opportunities, having a highly leveraged capital structure. Portucel, on the contrary, seems to have reached the end of its previous growth model of developing highly efficient mills in Portugal. Without opportunities to deploy its constantly growing cash resources, the firm is not growing nor will it in the foreseeable future, under current conditions.

First, the applicable previous research on the various subjects discussed throughout the thesis is reviewed in the Literature Review section. Following the Literature Review, an industry analysis is conducted and an in-depth analysis of the two firms to be merged. Forecasts on the main indicators of future performance is discussed and detailed in the Forecasts section. Before the results of the valuation models are presented, the rationale for the proposed transaction is clearly explained. Both Suzano and Portucel are individually valued using two alternative valuation models, which are then compared and their key assumptions tested recurring to sensitivity analysis. After a review of recent comparable mergers which formed the basis to estimate synergies and integration costs, the last part of this thesis concerns the issues regarding the actual merger. In the merger section, synergies and estimation costs are

estimated and integrated in the valuation of the merged firm. Finally, the structure of the deal, its risks and possible competition are discussed in The Acquisition section.

2. Literature Review

2.1. Recent trends in M&A

2.1.1 Cyclicity

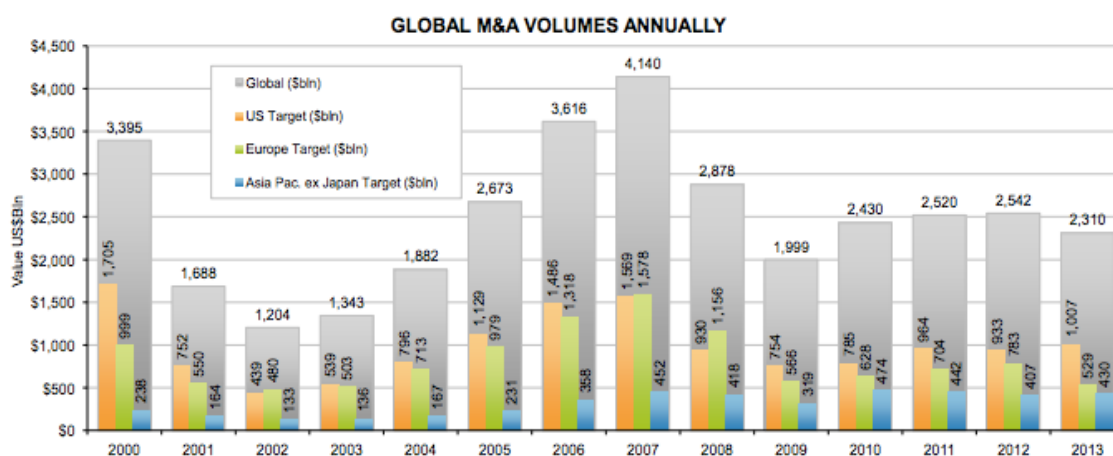


FIGURE 1: GLOBAL M&A VOLUME, BY YEAR. SOURCE: THOMSON REUTERS

M&A activity is cyclical, usually following a pattern of robust growth, eventually reaching a peak and initiating a downward path, usually sharp and simultaneously to an economic and/or financial slowdown (or a crisis). M&A activity is highly correlated with GDP growth and with the stock market. Therefore, a downturn in the economy leads to a decrease in the dollar volume of mergers and acquisitions.

The cyclicity feature of M&A can be observed from 2000 on (see Figure 1). After a peak in volume of \$3.4 trillion in 2000, deals went sharply down to \$1.2 trillion in 2002. Deals resurged in 2003 and M&A activity increased rapidly until 2007, reaching an all time high of \$4.14 trillion. With the 2008 financial crisis and consequent global recession, the volume again plummeted, to \$2 trillion. Subsequent years brought about a recovery which is still distant from 2007 values. In 2013, the global M&A volume reached \$2.3 trillion, \$200 billion less than 2012.

With the S&P 500 in its all time high and a bull market around the globe, a KPMG (2013) survey shows investors are confident regarding the current M&A environment and optimistic for more deals, both in number and volume, in 2014. The investors surveyed use three corporate observations to justify their expectations - companies have accumulated large cash reserves,

better credit terms and are avid to exploit opportunities in emerging markets. In turn, yield starved investors are likely to push corporate managers to pursue deals to use excess cash rather than returning it as dividends.

2.1.2. Which stage of the cycle? M&A market in 2014- 2015

There was a general agreement that the year of 2013 would mark the return to higher levels of M&A, possibly reaching pre-crisis levels. However, total deal value for the year lagged 2007 levels by a great margin, failing to reach even the 2010 figure. The activity expected for 2013 is set to be observed in 2014. In the first months of 2014, deals amounted to \$1.2 trillion, comparing to \$1.4 trillion over the same period of 2007.

In hindsight, the M&A boom of 2007 proved to be unsustainable. The financial and economic crisis that ensued marked the end of a growth stage in the M&A cycle, and volumes plummeted to decade long lows. In 2014, with deal values again reaching pre-crisis figures, the title of this section is a question that begs an answer. To understand whether these figures will be sustainable is key to accurately predict if a peak is once again forming and another M&A market bust will follow.

Comparing the first four months of 2007 and 2014 beyond the similarity of total values shows that there has been a shift in the way deals are done (Hammond, 2014). A Delloite (2014) study highlights the key differences between deals in both periods. Before 2007, M&A deals generally meant high leverage levels, with companies borrowing to finance their acquisitions done entirely with cash as payment method (76% of deals were all-cash in the first four months of 2007). In 2014, although cash is still king, more than half the deals relied substantially in stock as a method of payment. Another stark difference in M&A from 2007 to 2014 concerns market perceptions. Indeed, the market perceives deals being done as more strategic and value-creating than before: bidder's stock prices have since 2013 increased an average of 4.4% in the first day after announcement. This is quite a paradigm changing event – acquirers' share prices drops when deals first come to public has been a constant throughout the history of M&A. Another important data point is the 30% rise in equity markets of 2013, compared with a stable M&A volume over the same period. Given the fact that both are highly correlated, the M&A volume surge in 2014 can be but a mean-reverting process, according to Bob Eatroff, head of M&A at Morgan Stanley US. All in all, although the recent trend formed in the beginning of 2014 closely mimics the trend before the crisis, the fact that the type of deals

have changed doesn't allow for the conclusion that a peak has been reached and the cycle will turn south in the near future.

In terms of M&A activity by sector, telecoms, healthcare, technology and real-estate sectors dominate in terms of weight in total value, together accounting for 52% of total value, in 2014. The sector with the larger share of value was telecommunications, with deals amounting to \$252 billion in the first four months of 2014. Other sectors with relevant weight are Oil&Gas (6%), Construction (5%) and Finance (5%). Other sectors compose a third of global value.

Sector weight in total deal value, January to April 2014

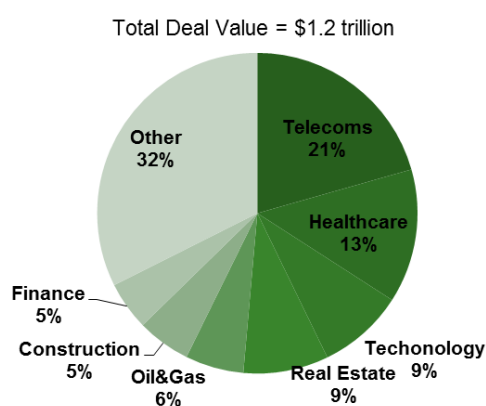


FIGURE 2: GLOBAL M&A BY SECTOR, 2014. SOURCE: FINANCIAL TIMES

2.1.2 Cross-border M&A activity

M&A is still mainly done domestically, both in developed and emerging countries. However, cross-border deals are increasingly popular, especially for mature firms which rely on acquisitions to enter new markets. In a Grant Thornton (2013) study, a third of the surveyed firms plan to make an overseas acquisition in the next three years, with nearly half of the European based firms planning to engage in cross-border M&A in the short-term future.

Cross-border and domestic mergers alike happen for the same reason: to the acquirers, the combined entity is more valuable than they are worth separately. However, it is widely agreed that cross-border M&A is usually more challenging and complex. The added complexity arises from cultural and geographic differences and its adverse impact on the integration process as well as the imperfect integration of capital markets, namely in stock and currency markets (Erel, Liao and Weisbach, 2010). This makes acquirers struggle to deliver expected value from

their acquisitions abroad: a KPMG (1999) study finds that only 17% of cross-border M&A deals created shareholder value.

A key issue in cross-border deal activity is the corporate governance standards in of target firms. Cross-border deals are done in a stock swap when the acquirer's country shows better governance, shareholder protection and transparency. The acquirer's lower governance risk increases the attractiveness of its stock for the shareholders of the target company. The acquirer, however, is often concerned with governance risk when acquiring overseas, in the sense that its target might be withholding information. Using stock instead of cash as method of payment can, to some extent, mitigate such risk (Huang, Officer and Powell, 2014). The authors show cross-border deals increasingly relying on stock rather cash as main method of payment, presumably a consequence of the above mentioned asymmetry of information problem.

2.2 Valuation Models

Corporations exist to create and maximize value for its shareholders through investing resources available in order to generate returns higher than the cost of capital. A company's decision making process regarding resource allocation should focus on growing as quickly as possible provided that growth is achieved by investments which yield rates of return higher than the cost of capital. To succeed, corporate managers must know how to estimate the value of the assets or companies being acquired. Several valuation models have been developed to assess value focusing on different perspectives of value creation.

Young, Sullivan, Nokhasteh and Holt (1999) provide a framework to segment valuation approaches based on their focus to estimate value. Approaches such as DCF or APV assume that value is derived from future cash flows, discounted to the present at the cost of capital. Other models estimate value through the spread between return and the cost of capital as well as the capital invested in a firm (ROE or EVA). Finally, relative valuation models, or multiples based approach, are based on market forces, or, in other words, what investors pay for similar firms. Contingent claim valuation is a final available approach.

2.2.1. Cost of capital estimation

2.2.1.1 Risk-free rate (rf)

Risk free rate is a theoretical rate of return a rational investor would expect to earn from a riskless investment. It can also be thought of as the minimum return an investor would expect

for any investment because accepting more risk would be compensated by a return higher than r_f .

A security with no risk must meet a certain criteria. To Damodaran (2008), it is an investment in which “the actual returns should always be equal to the expected returns”. In other words, the return on that investment must be certain, with variance equal to zero. To accomplish that, two basic conditions must be considered: the security mustn't have default risk and there can't be reinvestment risk. Even though, in practice, no investment has zero default risk (even the triple A rated credit securities have a positive, yet extremely small, probability of default) a government bond is usually the choice. As the argument goes, a country won't default on its debt because it can print more currency to service it. Of course, there is a limit to the amount of currency which can be printed and there are many cases of sovereign debt defaults. Still, it can be safely assumed that countries like the US, Japan or Germany, to name a few, are not going to default on their debt obligations. Regarding the elimination of reinvestment risk, one simply needs to choose a zero coupon bond, thus avoiding the uncertainty of the rate at which the coupons are reinvested.

Risk free rates vary with time to maturity, composing the yield curve. As cash flows of a company occur throughout time, the duration of the riskless rate should be matched with the duration of those cash flows. That would mean a one year cash flow should be matched with a one year zero coupon bond and a five year cash flow with a five year bond. However, argues that is neither practical nor necessary, mainly because the yield curve, at least in mature markets, is rather uniform throughout time and using a standard 10 year risk free rate yields similar results (Damodaran, 2008).

2.2.1.2 Market Beta

Beta coefficient is a measure of non-diversifiable risk, capturing the exposure of a security to the overall market price volatility. A theoretical portfolio composed by all the assets in the market has a beta of one. If one such asset has higher volatility than the market portfolio, it has a beta higher than one. Conversely, if one of the assets which compose the market portfolio is less volatile than the overall portfolio, it has a beta lower than one.

The concept of beta is particularly important in asset pricing theory and a component of most asset pricing models, namely the widely used CAPM, first introduced by Sharpe (1964). CAPM assumes that the expected return of an individual security is a function of systematic risk, while non-systematic risk shouldn't be rewarded with additional expected return because it

can be diversified away (Sharpe, 1964). The beta coefficient calibrates the model to account for systematic risk.

Although CAPM is most frequently used, other theories have been developed which challenge it. One such theory is the arbitrage pricing theory. This theory's basic intuition lies on the assumption that an asset return can be predicted through a linear function of a series of macro-economic variables, the betas. The major difference to CAPM is that the APT allows multiple explanatory variables (Ross, 1976).

More recently, Fama and French (1992) found that market betas fall short of capturing the cross section of expected returns. The authors compare CAPM with an asset pricing model which relies on two additional variables: size and book-to-market equity. This model outperforms the traditional model solely based on market beta, thus providing evidence that asset pricing models can perform better with additional beta coefficients.

2.2.1.3. Market Risk Premium (MRP)

Three different ways to estimate market risk premium exist (Fernandez, 2004). The summary definition for those three alternative concepts is:

- Required market risk premium: "The incremental return of the market over the risk-free rate (return on treasury bonds) required by an investor";
- Expected market risk premium: "The expected differential return of the stock market over treasury bonds"
- Historical market risk premium: "The historical return of the stock market over treasury bonds"

The first two, required market risk premium and expected market risk premium, change with investor's assumptions and beliefs. The third should be the same for all investors.

Regarding historical market risk premium, the calculation of MRP based on historical data has been developed more sophisticated models have been developed and tested due to some problems with this method. However, despite the importance research as awarded to this topic, there is a variety of MRP estimations in academic literature based on this technique, many yielding significantly different results, contrary to what would be expected. The different estimations constitute a con of this method and happen due to a lack of agreement on the key inputs of the model:

1. Which timeframe? While some use rather small periods (10 to 30 years), based on the argument that the investor risk aversion changes throughout history and thus older data is outdated, others base their calculations on data going back almost a century. The latter find a cost in the use of a shorter timeframe, which is the larger impact of noise. Indeed, some authors believe this figure must be stable overtime and should not react to stock market shocks such as the 2008 financial crisis. Nevertheless, the literature has arguments in favor of a figure which adapts rapidly to new market realities.

2. Which risk-free rate? Indeed, there are two alternatives: whether to use a short or long term security. The normal yield curve is upwards sloping, meaning the return increases with longer maturities. Although the yield curve can invert or flatten, it can be generally said the use of a short term risk-free rate overestimates MRP relative to the use of a longer term rate. Furthermore, the risk free rate used in computing MRP should be the same used in computing CAPM. As the standard in valuation is to use a ten year bond rate, that is the most appropriate rate for MRP estimation (Damodaran, 2013).

As an alternative, the expected MRP is a forward looking measure which depends on investor analysis of present/past conditions to predict the future. Estimating MRP with this approach involves surveying investors on the premiums that they either use or acknowledge as correct. The answers constitute a sample whose average can be thought of as the expected actual MRP. To come up with the most reliable estimate, the entities surveyed should be those with most influence in the market. A survey answered quarterly since 2000 (until the end of 2012) by US CFOs, with 17,507 answers, shows that CFOs change their expectations of the risk premium over time, depending mainly on the economic environment (Graham and Harvey, 2013). During the 2009 recession, the MRP stood at its highest (4.78%) while in periods of strong US GDP growth the figure is on average around 3.5%. By the end of 2012, the average estimate stood at 3.83% In a similar study, finance professors, analysts and company officers (financial and non-financial) were asked which MRP figure they used for 2012, with a total of 7,192 answers. The US average figure was 5.5%, close to the average for the rest of the developed world (Fernandez, Aguirreamalloa and Corres, 2012). There is a significant difference between these two figures, which highlights the main limitations of this estimation method:

1. Which survey respondents to target in order to gather a representative sample;
2. Survey results are extremely volatile;

3. The survey can yield an unjustifiable figure, like a negative or a double digit MRP figure.

2.2.1.4. The cost of equity in emerging markets

In developed markets, the cost is widely estimated through CAPM, although not without the controversy mentioned above. This controversy was shown to have roots in the works of Fama and French (1992) and Ross (1976). Regarding emerging markets, these models are deemed unfit because emerging markets are not be fully integrated in the global financial markets (Harvey, 1994). Markets are integrated if there aren't barriers to cross-border trade, capital flows and foreign investment in domestic financial markets. While developed markets integration is imperfect, because legal and market imperfections subsist, emerging markets often have restrictions concerning the flows of goods and capital with the rest of the world which severely limit its integration in global financial markets.

The implication of that violated assumption, which constitutes the basis of most asset pricing models, is that assets with same level of risk won't necessarily have similar expected return because assets in non-integrated markets won't be available for a global investor. Furthermore, emerging markets often experience other types of risks which don't normally occur in developed markets. These country specific risks include expropriation and political risk, among others. There is evidence that these markets not only are exposed to specific risks but that common risks factors used in asset pricing models perform poorly in emerging markets. The conclusion following is that the cross-section of expected returns of non-integrated, emerging markets is influenced by local information rather than by global information (Harvey, 1994).

Confronted with this, the literature has developed several alternative asset pricing models specific for emerging market valuations. One approach is estimating the cost of equity based on downside risk (Estrada, 2000). This approach builds on the CAPM to incorporate a downside risk measure, which is given by the semi deviation of returns to the mean returns in a world market benchmark. This approach consists in adapting the risk premium in CAPM to incorporate the risk spread between a non-integrated market and the global market.

$$\Sigma_B = \sqrt{(1/T) \cdot \sum_{t=1}^T (R_t - B)^2}, \text{ for all } R_t < B,$$

$$RM = \Sigma_B$$

$$RR_i = R_f + (RP_w)(RM_i),$$

Where,

Σ_B is the semi deviation of returns with respect to a benchmark

R is the return of a security

T is the number of observations in the sample

RR is required return

R_f is the US risk free rate

RP_w is the global risk premium

Another approach is to add a country risk premium to the cost of capital to reflect the additional risk an investor incurs investing in a market with specific risks such as economic, political and/or legal risks (Damodaran, 1999). The assumption implied in this approach is that the cost of capital should be higher when valuing companies in emerging markets which in turn indicates that the marginal investor – or the investor which is able to invest in all investable assets globally – should be rewarded with a higher expected return. As Modern Portfolio Theory dictates, an investor should be rewarded by systematic risk, while he shouldn't expect additional return from incurring in non-systematic risk, as it can be diversified away. Because CAPM is based on this assumption (as well as other asset pricing models), adding a country risk premium implies that risk cannot be diversified away and thus this approach is valid only if one accepts that the country risk incorporated in the cost of equity is systematic risk. The country risk premium is added to the equity premium of a mature market, usually the US equity risk premium (Damodaran, 1999). Country risk premiums can be derived by a country's sovereign debt rating (from rating agencies). The default spread in which ratings are based captures the risks of a country's debt. However, debt holders are exposed to much the same country risks as equity holders, namely currency risks, political and/or a regulatory risk, which leads to this approach' central assumption that default spreads are a good proxy for measuring country risk premium.

A third approach is to build probability-based scenarios which reflect the impact on cash flows should an adverse event (e.g. expropriation, war) materialize (Koller et. Al., 2010). In this approach, country specific risk is modeled directly in the cash flows rather than the cost of

equity. It has theoretical support because country specific risks are deemed non-systematic (the marginal investor can diversify away the risk of expropriation, for example), so they shouldn't influence the cost of capital but rather the cash flow projections. The first step to apply the method is to identify the events with non-zero probability of having an adverse impact on the company's cash flows. Then, an estimation of that impact must be developed. Risks must be translated in actual changes in the cash flows to come up with a valuation for the different scenarios. These can be constructed as variations of a base, "business-as-usual" scenario. Lastly, probabilities must be assigned so that the method yields a weighted average valuation, in which all risks and its probabilities of occurrence have been accounted for. All these valuation models share not only the same ultimate goal but also the same underlying model. Consequently, these approaches should yield the same result, although each focuses on different components (Young, Sullivan, Nokhasteh and Holt, 1999).

2.2.1.5. Weighted Average Cost of Capital (WACC)

Cash-flow based valuation models incorporate the cost of capital to incorporate risk and return into the valuation model. Indeed, cost of capital is the cost of the funds invested in a business to finance its operations. Capital can be sourced either from debt holders or equity holders and each of these capital holders have a broad range of securities to invest in the firm. A firm can be entirely financed by either equity or debt or, more commonly, by a combination of both. Thus, the cost of capital to use in most firms is a weighted average of the cost of equity and the cost of debt, the WACC rate. As interest payments are tax deductible while dividends aren't, the after-tax cost of debt is used.

The after-tax WACC formula is Arditti (1973):

$$WACC = \frac{E}{V} \times R_e + \frac{D}{V} \times R_d \times (1 - T_c)$$

Where:

E and D are the market values of equity and debt, respectively, and $E + D = V$

R_e is the cost of equity

R_d is the cost of debt

T_c is the corporate tax rate

The cost of debt is calculated by the market interest rate the firm must bear to borrow in normal conditions. The cost of debt for a corporation depends on the risk of the debt holder losing some or all the value lent. Consequently, the cost of debt R_d is equal to the risk-free rate plus a default spread, given by the firm probability of default in the future. The default spread is usually given by the firm credit rating, issued by credit rating agencies such as S&P or Moody's. Estimating the credit rating of a firm can be done through its interest coverage ratio (EBITDA/Interest payments) Korteweg (2007).

The cost of equity is not as straightforwardly observable as the remaining variables. While the target capital structure (D and E), tax rate and costs of debt is readily available for most firms, the cost of equity calculation is more dependent on the methodology chosen and theory used as a basis. Finance practitioners have established the use of the Capital Asset Pricing Model (CAPM) to calculate the cost of equity:

$$r_e = r_f + \beta(r_m - r_f)$$

Where:

R_f is the risk-free rate

β is the market beta

$(R_m - R_f)$ is the market risk premium

The formula shows that the cost of capital is a function of risk-free rate and an added component of risk, given by beta and the expected market risk premium. The components of CAPM have been discussed in the previous sections.

Valuation Models

2.2.2. Dividend Discount Model

Dividends are the main cash flow derived from equity securities accruing to common shareholders. Dividends are a function of a firm's earnings, its growth and timing, thus the equity value of a firm is largely determined by its earnings and dividends paid. Despite being related to earnings, evidence shows that managers target a long-term payout ratio, given by dividends as a percentage of earnings (Lintner, 1956). Consequently, dividends are not only determined by earnings growth but also by political decisions within the firm, which set the target payout ratio based on the belief that it will be sustainable and maximizes stock price.

A contradicting view is that managers target a steady growth rate of dividend yields rather than a fixed payout ratio (Brav. Et al., 2005). However contradicting, the findings of Brav ET al. corroborate the fact that dividend payments are not only related to earnings growth but also to political decisions of firm's managers.

The Dividend Discount Model (DDM) is developed on the basis that the value of a common share can be estimated through the expected dividends per share discounted at the discount rate investors require in a given moment. The equation which captures that relationship is:

$$E_t[P_t] = \sum_{i=t+1}^{\infty} E_t[D_i] / (1 + r_t)^{i-t}$$

Where:

$E_t[P_t]$ – Expected price an investor is expected to pay for a common share in period t

D_i – Nominal annual expected dividends per common share at time i

R_t – The required return for investors at time t, i.e., the cost of equity

Forecasting dividends in the long-run lacks precision as uncertainty grows with time. As such, it is customary to use this model – as well as most other valuation models – in two stages. The first stage, often deemed the estimation period, uses actual information firm information to estimate dividends by period. The second phase is the terminal value, calculated assuming a constant dividend growth rate in perpetuity. The appropriate discount rate to input in this model is the cost of equity, in this thesis calculated through CAPM.

An alternative approach is the ROPE model which, in contrast with the DDM, yields dividend figures by estimating return on equity (ROE) and payout ratios (Rozeff, 1990). The difference of this model lies in the assumption that dividend growth rate do not decline over time, as the DDM typically assumes. The ROPE model states that as firms mature, ROE decreases while excess cash generation increases, as positive NPV projects to invest shrink. As such, the fall in ROE is compensated with a larger payout ratio. The net result is that dividends per common share are either maintained or increase as firms mature, finds Rozeff (1990).

2.2.3 Adjusted Present Value (APV)

The Adjusted Present Value approach starts by valuing a project or a firm as if entirely financed with equity. Under this method, one analyzes the value of the project derived by the business separately and then calculates and adds the value created by financing decisions.

Modigliani-Miller proposition I has laid the ground for Myers's (1974) APV valuation model proposal. The theorem states that, ignoring taxes and other financing side effects, capital structure has no impact whatsoever on firm's value. However, in the presence of taxes, the value of the firm can be increased by replacing debt for equity and increasing the weight of debt relative to equity in the capital structure. The added value comes from the tax deductibility of interest payments which does not occur in dividend payments.

To Luehrman (1997), APV performs better than the WACC approach as it "always works when WACC does, and sometimes when WACC doesn't, because it requires fewer restrictive assumptions. APV is less prone to serious errors than WACC. But most important, general managers will find that APV's power lies in the added managerially relevant information it can provide." Indeed, this approach allows the user to separate firm value into different components. The first step is to value the company's operating and investment cash flows. The discount rate used to get the value of those cash-flows in the present is the unlevered discount rate, which reflects the risk of the company financed only with equity. This rate is commonly obtained using CAPM. The second step is the calculation of the financing side effects. There exist five potential sources of value accretion/destruction arising from capital structure decisions, which include interest tax shields, cost of financial distress, subsidies, hedges and issue costs (Luehrman, 1997).

To calculate interest tax shields for a given level of debt, the value of the tax shield is equal to the present value of the interest tax savings, discounted at the cost of debt (Cooper and Nyborg, 2006). Although it is argued that the riskiness of the tax shields is the same as the riskiness of debt, there are special cases where this is considered incorrect. An alternative is to use a higher discount rate, the cost of assets usually, to discount tax shields of firms in financial distress or going through a highly leverage transaction, namely an LBO.

The financing side effects are also captured through the estimation of the expected bankruptcy costs. Damodaran's (2010) formula highlights the two components of the expected bankruptcy costs. Multiplying the probability of a firm going bankrupt in the next period by the cost of such event retrieves the theoretical cost of bankruptcy of that period. This cost will be either the bankruptcy cost or zero, depending on whether bankruptcy actually occurs.

$$\begin{aligned} \text{PV of Expected Bankruptcy cost} &= (\text{Probability of Bankruptcy}) \times (\text{PV of Bankruptcy Cost}) \\ &= \pi_a BC \end{aligned}$$

The probability of bankruptcy is a rather obvious concept. Its estimation is, however, far from simple. Damodaran (2010) provides two alternative estimation techniques. The first is to either use bond ratings assigned to the firm or estimate the bond rating based on debt levels, and use the default probabilities assigned to each rating. Alternatively, one can use a statistical approach based on firm specific characteristics, corresponding to a debt level and set of characteristics and probability of bankruptcy, based on historical bankruptcies of firms with similar figures.

The other part of the equation which must be estimated are the costs associated with a bankruptcy, if such event were to happen. Modigliani-Miller (1958) proposal states that, without taxes and the possibility of bankruptcy, no capital structure can be considered optimal. Stiglitz (1969) proves that the proposition holds with probability of bankruptcy, as long as there are no costs associated with it. Bankruptcies are costly to the firm, however. Specifically, it is commonly assumed that the costs associated with a bankruptcy fall into two broad categories: direct and indirect costs.

Indirect bankruptcy costs include lost sales, lost profits and higher cost of credit, or the inability to issue securities at a reasonable cost. A problem with these costs is its measurability. Altman (1984) uses a regression to measure the difference between estimated profits and actual profits. The difference is the bankruptcy cost (direct and indirect costs). This author also presents a technique based on analysts' expectations.

Direct bankruptcy costs are fairly straightforward to measure. These include legal and accounting fees and managerial time spent on the bankruptcy process. The literature is contradictory in the estimates of the average amount of these costs relative to firm value. Warner (1977) finds that these costs are quite small, estimated at about 1% of firm value, based on a sample of railway companies. It follows that direct costs of bankruptcy shouldn't have a significant weight on capital structure choice, although not to be entirely mustn't be ignored. Altman (1984) argues that the sample used by Warner (1977) is narrow and not widely applicable, proposing a different analysis which yields direct bankruptcy costs of 6%, leading to the conclusion, even without accounting for indirect costs, these are significant and cannot be dismissed from decisions on capital structure. Furthermore, his findings suggest costs of bankruptcy, both direct and indirect, can exceed 20% of firm value just prior to bankruptcy and between 11% and 17% when measured three years prior to bankruptcy. These costs are thus very significant to capital structure decision making.

2.2.4. Relative Valuation

Valuation using multiples is a widely used technique across investors, bankers and academics alike. In this model, a multiple of firm value (e.g. P/E, EV/EBITDA) is multiplied by a performance measure (e.g. EBITDA, Net Income, EBITA) to estimate the value of the firm. To ensure a proper multiples valuation, there are some rules in constituting the peer group. A peer group must be composed of companies in the same market, competing for the same customers, exposed to the same macroeconomic forces and with similar growth and return on capital. These characteristics create a homogeneous group because these firms have cash-flows with similar growth expectations and level of risk.

Once the peer group is chosen, it is important to be consistent with the inputs to calculate the multiples. Indeed, several adjustments might have to be made in order to make multiples truly comparable:

- Operating leases: Firms which resort to operating leases as a means of financing will have an artificially low enterprise value (assets and debt are not recognized) as well as EBITDA (leasing expense includes interest and is recognized as operational). In order to accomplish fair comparisons, one must add the value of operating leases to EV and add implicit interest to EBITDA, for firms which use operating leases.
- Pension expenses: Firms have pension plans, which are basically assets put aside to fulfill a future liability, which is the retirement compensation to its employees. The expected return on those assets, together with pension expenses, offsets pension liabilities. Because the expected return is a management's choice, two firms with similar pension plans can have different pension expenses.
- Excess cash and other non-operating assets: Non-operating assets should be excluded from EV as they are not used by the company to conduct its business.

Enterprise Value	EBITDA
- Excess cash	-
+ Operating Lease commitments	+ O. Lease implicit interest expense
+ PV pension liabilities	+ Pension interest expense
= Adjusted EV	= Adjusted EBITDA

FIGURE 3: ENTERPRISE VALUE AND EBITDA ADJUSTMENTS

Multiples based on forecasts work substantially better than multiples based on historical data, which have little capability of pricing IPOs. When forecasts are available, forward-looking multiples perform superiorly, yielding results much closer to the actual pricing of the IPO than using historical data (Kim and Ritter, 1999). The existing research points to an agreement regarding this issue: forward multiples provide better estimations of firm value than historical multiples. Valuation theory provides further support to forward multiples: value comes from future cash-flows.

Lastly but perhaps most importantly, a multiple must be chosen. While it is generally argued that the right multiple varies across industries, there exist multiples which perform best for most industries while others perform poorly regardless of industry or firm characteristics (Liu, Nissim and Thomas, 2001).

The price-to-earnings (P/E) multiple is very popular among investors and usually reported in the media. This goes against empirical evidence, which states that this multiple is flawed and inaccurate, mainly for two reasons. Firstly, the capital structure of a firm has an impact on net income and thus on the multiple, while evidence suggests that a multiple performs better when it only depends on operational earnings. Secondly, net income is also affected by non-operating items, such as one-time expenses (gains). These items distort the multiple as they incorporate the effect of one-time only expenses (gains) which lead to an artificially high (low) multiple. A way around these shortcomings is to use a multiple which focuses only on the operational component of earnings, EV/EBITA. By ignoring non-operating items as well as capital structure, one can compare firms based only on their operating performance.

$$\frac{\text{Value}}{\text{EBITA}} = \frac{(1 - T) \left(1 - \frac{g}{\text{ROIC}}\right)}{\text{WACC} - g}$$

2.2.4.1. The Multiples Puzzle

Executives are often puzzled by the valuation the market attributes to its stock. These executives belong to companies which have higher growth and return on capital than their peers and should thus, according to finance theory, be awarded a higher multiple. Although this is theoretically correct, the market seems to persist attributing similar multiples to each firm in a peer group. A possible explanation is that investors believe a firm outperforming their

peers is unsustainable, and value these firms assuming higher growth rates and return on capital will fade away and converge with the industry (Foushee, Koller and Mehta, 2012).

Empirically, it has been observed that true peers – groups of companies in the same market, exposed to the same macroeconomic forces and with similar growth and return on capital – will converge in terms of revenue growth: a company outperforming its peers today is unlikely to continue to do so in five years (Foushee, Koller and Mehta, 2012). This explains why peers have similar multiples, even though they don't have similar growth and ROIC.

One of the main reasons for this phenomenon is how firms sustain abnormal growth rates. Firms growing often accumulate excess cash, which they use to make acquisitions. These acquisitions support growth and profitability, but acquiring firms must often pay a premium to convince target' shareholders to sell. This premium over book value of the assets acquired generates goodwill. Operating returns exclude goodwill. The premiums paid, over book value, for acquisitions lower ROIC. Investors believe that goodwill will keep on reducing ROIC of all companies in the industry, thus attributing similar multiples to the peer group (see figure 4). The exceptions are usually companies which prove to investors their superior business model and superior capabilities.

Example of US packaged-goods companies,¹ n = 109

Median return on invested capital (ROIC), %

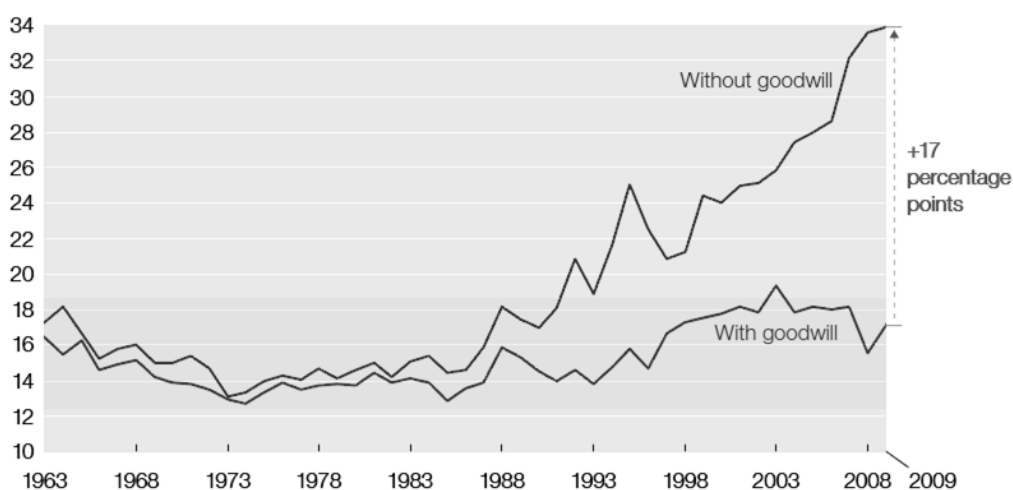


FIGURE 4: ROIC, WITH AND WITHOUT ACCOUNTING FOR GOODWILL. SOURCE: THOMSON REUTERS

2.2.5. Conclusion

This thesis focuses on cash flow and relative valuation models. According to Damodaran (2002), the DCF approach is the basis of any valuation. Furthermore, Luehrman (1997) shows that APV is a useful tool and highlights information which are only implied in DCF approach. Lastly, Goedhart, Koller and Wessels (2005) refer the importance of using the multiples approach simultaneously with a cash flow based approach to improve its performance.

2.3. M&A-related topics

2.3.1. Return for shareholders

Mergers generally create economic value. Although the disparity of returns is high, depending on firm characteristics and the external environment, total shareholder return is, on average positive upon a merger (Bruner, 2005). Beyond whether M&A creates economic value, research has focused on the division of wealth created among acquirers and acquiring shareholders. Research points to the fact that the distribution of the gains in a merger is asymmetrical, skewed to favor acquired firm shareholders. Bruner (2005) concludes that shareholders of firms earn, on average, substantially larger returns than what was expected in an equitable distribution. The author also finds that, albeit shareholders within acquiring firms tend to profit little from acquisitions, they still manage to earn their return on investment rate. Acquiring firms hand-in most of the value created in a merger through the premium paid, thus retaining a relatively smaller share of value created.

Another way to look at this issue is by measuring market response, in the form of returns, to deal announcements. By studying the market performance of acquiring firms over a period of six years, Sirower and Sahni (2006) reach similar conclusions to Bruner (2005). Their research shows that acquirers had a return of -4.1% after the deal announcement. Furthermore, initial market response was found to be persistent over time. One year after the merger, acquirers maintained roughly the same return, at -4.3%. The opposite also holds: initially positive returns were still positive a year later.

In conclusion, there is strong evidence that M&A creates economic value and that it is asymmetrically distributed among target and bidder's shareholders. Indeed, acquiring firms give away most of the synergies resulting from a merger to acquired shareholders, as the premium they pay to convince the target to the merger is often too high.

2.2.2. Payment Method

M&A transactions are typically of large size, comparing with the firm's assets or revenues. Consequently, how a firm finances acquisitions has a large impact on the acquirers capital structure, namely ownership and financial leverage. The method of payment chosen, be it equity or debt, has severe impacts beyond capital structure, in areas such as taxation, corporate control and risk management.

From the above, it is understandable that managers and stakeholders face important decisions which can have deep consequences in firm value. The method of payment chosen for a deal is one such key decision. The choice between cash or stock as the deal currency is analyzed as a trade-off. If cash is used, leverage is required, which increases the cost of financial distress, diverts leverage capacity from other projects and can decrease managerial flexibility (e.g. through debt covenants). However, there is value created through tax shields and the acquirer is able to retain control over the merged entity. Although a stock deal is unlikely if the acquirer wants to preserve control, it is an attractive payment method if leverage capacity is either limited or available on relatively expensive terms, if the bidder's shareholders do not assign much value to corporate control or if there are tax advantages (e.g. the ability to defer tax liabilities).

Faccio and Masulis (2004) performed an analysis on the trade-off between the use of cash and stock deals, weighing in corporate control against leverage limitations. The authors conclude that evidence suggests that the incentives to retain corporate control and use cash are strong when there are controlling shareholders of the bidder. Their analysis also takes into account market-to-book value of the bidders' assets and share price behavior. These factors are found to be statistically significant explanatory variables for the chosen payment method.

2.2.3. Synergies

When two companies merge their combined value is usually greater than if those two firms operate independently. The additional value generated is synergies. These can take the form of operational synergies – such as economies of scale, greater pricing power and new growth potential – or financial synergies – such as tax benefits, efficient use of excess cash and diversification gains. Diversification as a source of financial synergy is possible although many argue that investors can diversify more efficiently on their own thus making this an inefficient and redundant move. Furthermore, the bidder often lacks the skills needed to run the target firm which can lead to worst performance of the acquired company. In turn, managers of the bidder can lose its focus thus affecting the performance of the acquirer, too. Doukas, Holmen

and Travlos (2001) find not only that investors are aware of these problems and react negatively to a deal with the intent of diversification but also that they are usually proven right, as the performance of the bidder deteriorates after the merger is completed.

Synergies create value either through an increase in cash flows or a decrease of the cost of capital of the combined entity. The value of the combined firm generally increases after the merger Bradley, Desai and Kim (1988). However, merging two firms can also destroy value, which is known as reverse synergies. In this case, the expected performance of the independent firms is adversely affected by the merger thus resulting less valuable merged entity.

Sound valuation of synergies is a critical success factor in any merger. This is rather complex because the acquirer can lack information about the target business and it relies on many assumptions regarding the future. It is also important to separate synergy value from value of control to avoid double counting.

Valuation should be done through a DCF analysis. The first step is to list all the expected synergies as well as the costs associated with them. Managers must assess synergies according to the costs required to secure them. Then, a timeframe must be developed to list those synergies in chronological order. While some synergies can be reaped almost immediately, others take longer. Failing to acknowledge this in the cash flow estimation leads to an inaccurate valuation which in turn can lead to a premium offered too high. Thirdly, both companies must be valued as independent entities. Finally, subtracting the value of the sum of both firms from the value of combined entity equals the value of synergies.

Additionally, accretive acquisition can be a motivation for engaging in an acquisition. Although its underlying assumption is that investors are irrational, the proposed value creation logic is that acquiring with lower earnings multiple than the acquirer will increase the multiple after the acquisition, matching the acquirer's. That would translate into an immediate capital gain for the acquirer, once the merger was concluded.

2.2.3.1. SVAR

Synergies result from the performance improvements and value created when two firms are combined in a merger. Although synergies can express themselves in a number of forms, most commonly through increased revenues, cost reductions or lower cost of capital, ultimately, they are reflected in the present value of future cash-flows. These must be calculated before

deal is done and often without knowing the acquired firm in large detail. Besides the uncertainty of synergy materialization, evidence that acquirer's pay too much for their acquisitions led to the need of developing a tool to measure how much acquiring firms' shareholders stand to lose if the synergies proposed fail to materialize after integration.

The SVAR is a tool to calculate synergy risk relative to shareholders' wealth (i.e. market value of equity) (Sirower and Sahni, 2006). To compute SVAR, the premium paid is divided by the acquirer market value before the merger. The result is the percentage of shareholders' equity at risk if synergies end up being null. In an all-stock deal, the formula is adjusted to incorporate the fact that the acquirer will only bear the synergy risk corresponding to its equity in the merged firm.

2.2.3.2. Operating Sense of Synergies

The success of a merger depends largely on the ability of the acquirer to increase the value of the merged companies so that the premium paid for the target's shares is compensated by synergies and value of control. In other, words acquirers must meet the premium paid in the acquisition by cost or revenue synergies. So boards and managers should understand which cost decrease and/or revenue increase is required so that the premium paid is met, therefore making the merger worthwhile for the acquirers (Sirower and Sahni, 2006). The authors propose a method which resembles a breakeven analysis – by looking at the improvements in the bottom line sufficient to, at least, generate value equal to the premium paid. This analysis assumes that the already expected performance improvements as stand-alone businesses should not be included and must not be adversely affected by the merger, because this performance is already accounted for in the stock price, not the premium.

The method aims at informing about the required improvements which must take place with a simple formula which relates the premium offered, EBIT and cost and revenue synergies.

$$\%SynC = \frac{\Pi}{1 - \Pi} \cdot (\%P - \%SynR)$$

Where,

%SynC is the required percentage cost decrease to justify the premium

$\frac{\Pi}{1-\Pi}$ is the pretax profit margin

%P is the percentage premium offered

%SynR is the required revenue increase to justify the premium

This formula yields a range of possible combinations of cost and/or revenue synergies which compose the MTP (meet the premium) line. If the expected synergies fall below the line, then the merger will destroy value for the acquirer, at the premium currently offered. In turn, the expected synergy mix should always be above the line. To expand on this analysis, the authors question the cost base which can realistically be changed as well as the potential revenue improvements – which are usually much harder to anticipate and materialize in the short term. To address this question, the authors recommend looking at similar deals and at the cost structure of the business in order to generate a maximum plausible synergy mix, which values beyond are unrealistic. The premium offered must then be justified by improvements within the plausible range of synergy mix, or the Plausibility Box – values beyond the plausibility box can be the result of too optimistic assumptions.

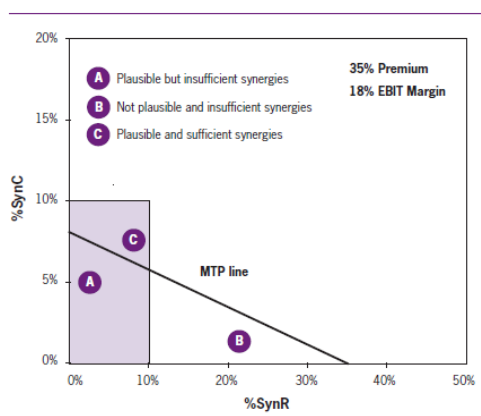


FIGURE 4: MEET THE PREMIUM LINE . SOURCE: (SIROWER AND SAHNI, 2006)

Sirower and Sahni (2006) consider a third question – is the combination of cost and revenue synergies proposed in the MTP method achievable in operating terms? The authors suggest a follow up of the proposed synergies which fall within the plausibility box based on the strategic nature of the deal and the type of assets and capabilities being brought together.

To answer the question, they developed a matrix relating the type of market access and capabilities of both parties. The matrix's intent is to assess whether the synergies are viable given two parameters being evaluated, market access and capabilities. If the merging companies compete in different markets, then the merger will result in access to new markets for both firms. Conversely, if those companies are competitors, they can either improve their market access or it can remain unchanged. A similar analysis is performed on the capabilities

side. A merger can result in new capabilities for one or both firms but it can also improve or maintain them.

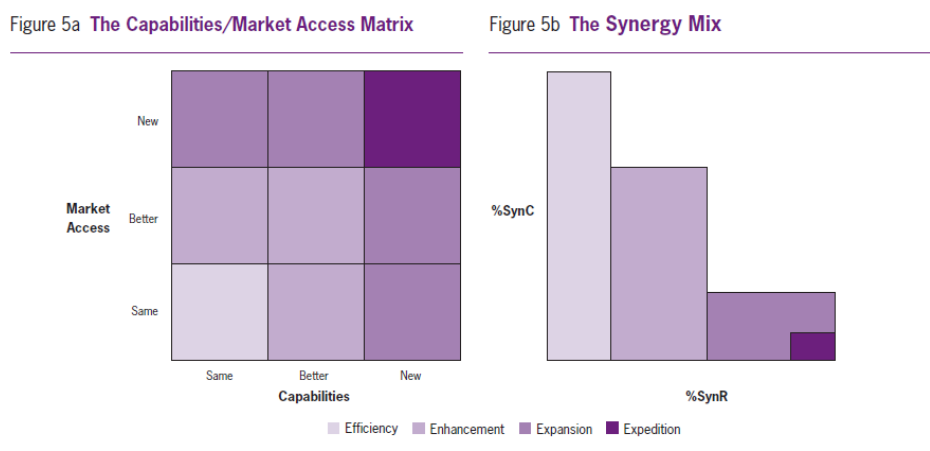


FIGURE 5: CAPABILITIES/MARKET ACCESS FRAMEWORK. SOURCE: (SIROWER AND SAHNI, 2006)

The characterization of the deal based on the matrix is followed by the categorization of the deal. There are four options:

1. Efficiency: The prospective merger brings together two similar companies in terms of market and capabilities. A deal of such kind should yield virtually no revenue synergies only elimination of redundant costs and scale economies (costs synergies).
2. Enhancement: Two companies with similar market access and capabilities can merge to form a company better positioned in competitive terms. These deals should form a cost and revenue mix, with scale economies combined with increased sales and new customers.
3. Expansion: When the overlap of capabilities and market access is limited but the companies improve their competitive positioning or expand into new segments, the deal results in mostly revenue synergies. However, cost synergies can still be reaped.
4. Expeditions: Deals between companies distinct from each other should have the strategic rationale of increasing revenues, mainly through cross-selling. Expeditions happen when acquirers seek companies in different markets and fundamentally different business models than their own.

The authors propose this method to assess the potential synergies yielding from a deal. It should be used as a basis of discussion to the synergy mix, bearing in mind that if the synergy mix differs substantially from the category's indicative synergy mix, its underlying assumptions must be reassessed.

3. Industry Review

3.1. Supply analysis

3.1.1. Introduction

The paper industry is capital intensive because the need to build production infrastructures, mainly paper and pulp mills, as well as distribution infrastructures, such as roads, railways and ports. The industry has been in decline in many of its segments, originating periods of excess capacity. Capacity available is quite constant over time because mills have a useful life of more than 30 years. However, the constant need to be efficient and innovative, driven by low margins across most segments, requires large investment in fixed assets periodically, when mills must be shut down and rebuilt to gain more efficiency.

3.1.2. Industry Mergers & Acquisitions

The industry relies on M&A to grow and achieve scale and scope. Organic growth is limited as opportunities are scarce in this mature and saturated industry. Firms in the western world are actively seeking higher exposure to fast growing emerging markets, experiencing stable or declining demand at home coupled with excess capacity. Consequently, the bulk of the investment in this industry is captured by emerging markets with comparative advantages vis-à-vis mature economies. The US-based International Paper acquisition of SCA's Asian operations is an example of that.

Another industry trend, dating back almost a decade, is the consolidation of supply in Europe and the US, as firms look for scale to improve margins. The 2010 UPM acquisition of Finnish firm Myllykoski was completed with the main strategic rationale being improving profitability through building scale. M&A is also driven by deals intended to retire capacity of the market. There is persistent over capacity in mature markets across most segments, which drives down prices. To counter this, the major players are acquiring competitors and shutting down their older, inefficient mills. International Paper announced in the end of 2013 the shutdown of its largest paper mill, citing shrinking demand due to switch to online format and the need to take

capacity off the market. In China, similarly, tackling excess capacity has been conducted through a government program mandated to shut down inefficient paper and pulp mills.

3.1.3. Business Segments

The global paper and pulp industry competes with other industries in the procurement of wood, its main raw material. There are a few different types of wood which are transformed into cellulose, the main component of most kinds of paper apart from recycled fibers. The industry's output can be segmented into five groups of products: Printing and writing paper, newsprint paper (used in newspapers and magazines), tissue paper, container board (used in paper packages) and other types of paper and paperboard (paper bags, filters, etc). The scope of this thesis only concerns the printing and writing paper segment, the only type of paper produced by Portucel and the main type produced by Suzano. This segment has similar raw material (wood logs) but its transformation is quite distinct from other segments. The end users as well as the distribution channels are also different which makes this segment a rather independent business from the rest of the industry.

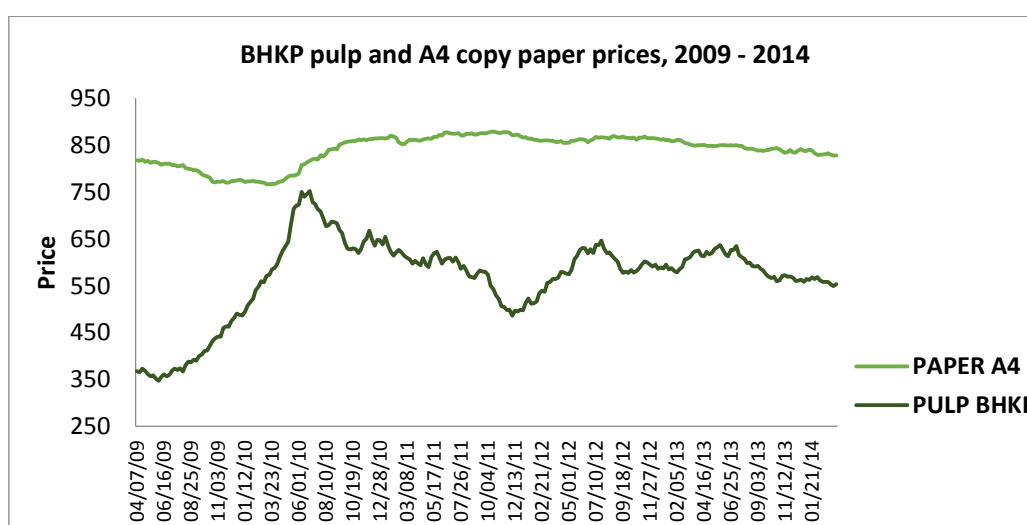


FIGURE 6: PULP AND PAPER INDEX PRICES. SOURCE: FOEX INDEXES

The industry is primarily composed of integrated paper producers. An integrated producer has industrial units with a pulp and paper mill connected. Once the raw material is transformed in the pulp mill, into pulp, it directly enters the paper mill. This means that paper mills which source pulp from elsewhere are an exception. This organization of production is optimal because pulp prices are volatile while paper prices tend to be constant over time (see Figure 6). The industry's inability to pass higher input (i.e. pulp) costs to customers has led to the need to hedge against pulp price volatility or otherwise face unpredictable and highly volatile

costs and, consequently, unpredictable margins. This has led to many firms experiencing financial problems in the past as firms are usually highly geared in this industry.

Firms could simply hedge input price volatility recurring to contracts or financial derivatives. However, firms chose to hedge through producing and stocking a part or the whole of their pulp needs. The chosen hedging mechanism has to do with costs associated with sourcing pulp externally which are not occurred in the integrated production system. Pulp has a high percentage of water in its composition. To produce paper, pulp must retain a high degree of water composition. However, transportation of wet pulp is too expensive due to its weight, substantially higher than the weight of dried pulp. As a consequence, to reduce transportation costs, pulp is dried before shipping. When it reaches its final destination, the paper mill, the dried pulp has to be splashed with water to regain the desired humidity. The cost of doing this is eliminated in the integrated production system which confers a cost advantage to integrated firms.

There is still a global market for pulp. The main players are firms which have excess/deficit of pulp as paper production input for their own mills and paper firms which are not integrated, around 15% of total firms.

3.1.4. Industry Consolidation

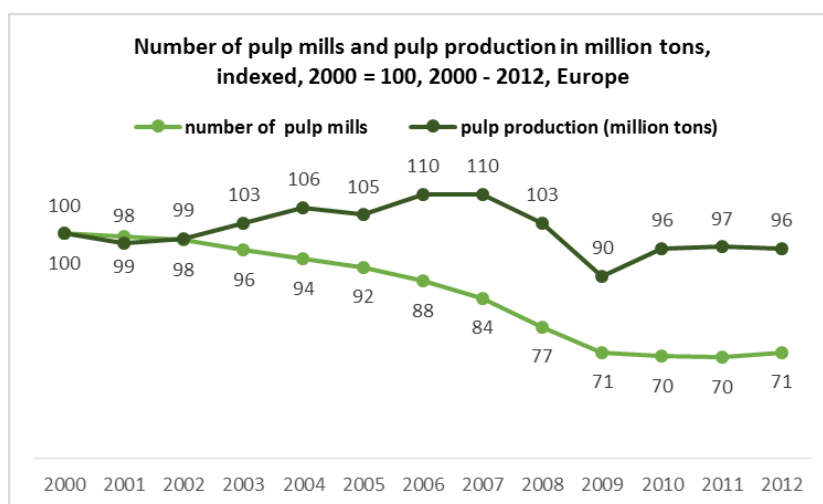


FIGURE 7: NUMBER OF MILLS AND TOTAL PULP PRODUCTION VOLUME IN EUROPE. SOURCE: CEPSI

The industry has been going through a trend, since the beginning of the XXI century, towards supply consolidation. Although it is an industry wide trend, it has been experienced in larger degree in the mature markets of North America and Western Europe. Indeed, either through M&A activity or bankruptcy, the number of mills has been decreasing while production has

been stagnant or increasing, depending on the region. China has instituted a set of incentives to close down old, inefficient mills while developing new, larger units.

Europe’s trend has become very pronounced since 2007 – while production of pulp production has picked up again after 2009, reaching 96% of the 2000 figure by 2012, the number of mills was reduced by 30%, from 2000 to 2012 (see Figure 7). This clearly highlights the trend towards the development of new mills with enough scale and efficiency to be profitable while old and smaller mills, typically running at a loss, are gradually being closed down. Mill closures accelerate as soon as pulp prices decrease.

3.2. Demand analysis

3.2.1. Printing & Writing paper: trends and forecasts

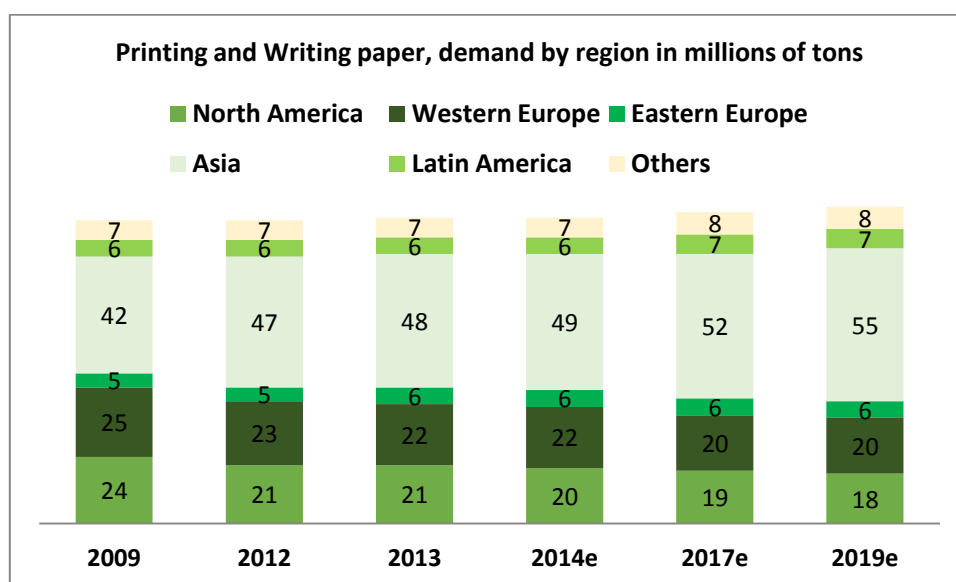


FIGURE 8: DEMAND OF PRINTING & WRITING PAPER BY REGION IN VOLUME. SOURCE: POYRY

Suzano Papel e Celulose and Portucel both focus mainly in the Printing & Writing Paper segment so this analysis focuses mostly on that segment.

Global Printing & Writing Paper demand, in volume, grew 0.2% per year in the last three years. Poyry, a consultant firm, forecasts that this growth will increase to 0.4% until 2019. However, demand trends vary considerably across geographic segments. North America and Western European markets have been shrinking at a relatively fast pace and will continue to do so in the foreseeable future. From 2009 to 2013, estimates point to a yearly 3.8% and 3% decrease in quantity turned over in North America and Europe, respectively. Global growth in the 2009-2013 triennium is coming from emerging markets such as Asia (CAGR = 3.3%), Eastern Europe

(CAGR = 3.1%) and Latin America (CAGR = 2.3%). Over the next five years, these markets will keep growing, although at a slower pace, forecasted to be around 2% (see Figure 8).

3.2.2. Demand shift to environmental-friendly products

Deforestation is an issue currently raising a wave of social awareness worldwide due to its harmful effects on the environment, namely on wildlife natural habitats and CO2 emissions into the atmosphere. As such, environmentally aware consumers, a growing segment of the market, are shifting their preferences in terms of paper products towards recycled and environmentally-friendly types of paper. Besides recycled paper, customers tend to opt for wood free paper (UWF paper has 10% or less of hardwood pulp in its composition) and chemical free paper. This trend has been accompanied by paper manufacturers – recovered paper (i.e. recycled paper) globally has grown by 45% from 2001 to 2011, adding another 70 million tons to the 2001 figure of 150 million tons. Although consumers drove this trend, companies in fiber-poor locations also found in wood free and recovered paper a way to lower their wood and pulp import needs. In China, a country which has a large deficit of wood and, consequently, pulp relative to its paper production and consumption, was responsible for more than half the 70 million tons increase in recovered paper production between 2001 and 2011.

3.2.3. Country economic development and paper consumption growth

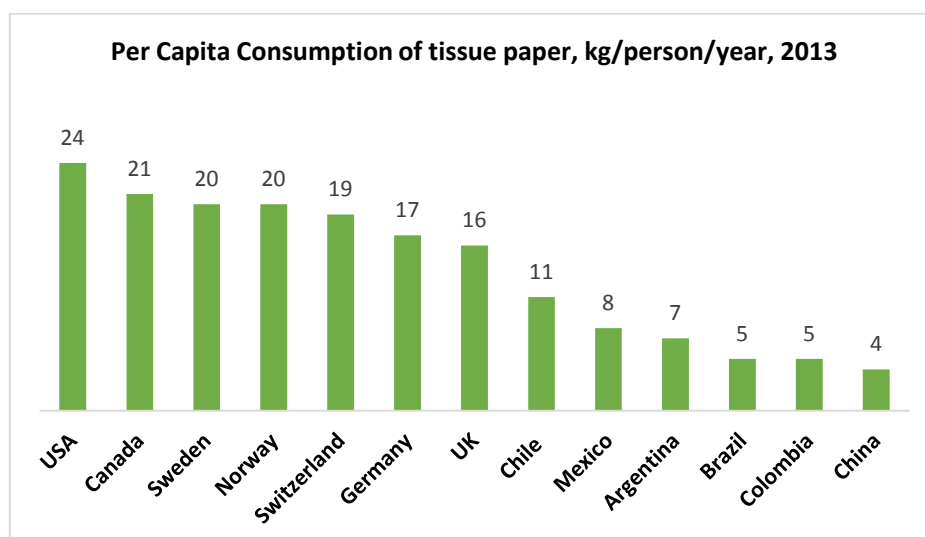


FIGURE 9: PER CAPITA CONSUMPTION OF TISSUE PAPER. SOURCE: RISI

Paper products consumption is highly related to GDP per capita. In 2013, the consumption of tissue paper is highest in countries where GDP per capita countries is highest, such as the USA,

Canada or western European countries, while consumption is a fraction of that in developing countries such as Latin American and Asian countries. This is explained by the disposal income households have in wealthy countries as opposed to relatively poorer countries. In the former, consumption of packaged products, use of tissue paper and printing & writing paper is larger due to the consumption habits of households and firms alike. In the latter, disposal income is directed towards more essential products and there are substitutes, cheaper products which are used albeit their intrinsic lower quality. As economies develop, consumers tend to adapt purchasing habits similar to the ones wealthy countries currently have.

The relatively low consumption of paper products in developing economies allows potential for demand growth for most of the paper segments, reason why forecasts point to larger growth rates in those countries than in developed countries, which are forecasted to be stagnated throughout the future.

4. Company Review

4.1. Suzano Papel e Celulose

Suzano Papel e Celulose is a Brazilian based company controlled by Suzano Holding (57% of capital structure in March 2014) and traded in the Brazilian stock market (BOVESPA), with a free float of 41% (March 2014 figures). Its market capitalization stood at R\$ 9.3 billion on March 2014.

Suzano is a forestry-based company which operations include pulp and paper production and forest land management, mainly composed by eucalyptus wood. It has a total of seven plants, three of which (Mucuri, Suzano and Limeira) are integrated, one (Maranhão) produces only market pulp and two produce paper (uncoated and paperboard). For the sake of comparison, all values are expressed in euros.

4.1.1. Revenues



FIGURE 10: TOTAL REVENUES. SOURCE: COMPANY ANNUAL REPORTS

Suzano achieved revenue CAGR of 6.8% throughout the five year period between 2009 and 2013, from €1.43 billion to just below the two billion euro mark (€1.99 billion in 2013). This figures lacks explanatory power as growth didn't follow a stable trend throughout the period – from 2009 to 2010, with the expanded capacity installed and the global economic recovery, revenues surged 35%, supported by the higher capacity available and the recovery of economic activity. In 2011 and 2012, revenues were stable, slightly over €2 billion.

Growth was sustained throughout the period, despite a weak economic recovery and the worsening of industrial activity - and the economic activity, in general - in Brazil. This has been accomplished through greenfield investments in the development of new industrial units, as well as expanding the existing units. The output of those units is extremely competitive not only in Brazil but also in international markets, because of Suzano's efficient mills and environmental characteristics which make Brazil the country in the world where eucalyptus pulp can be produced at a lower cost.

4.1.1.1. Paper

4.1.1.1.1. Revenues

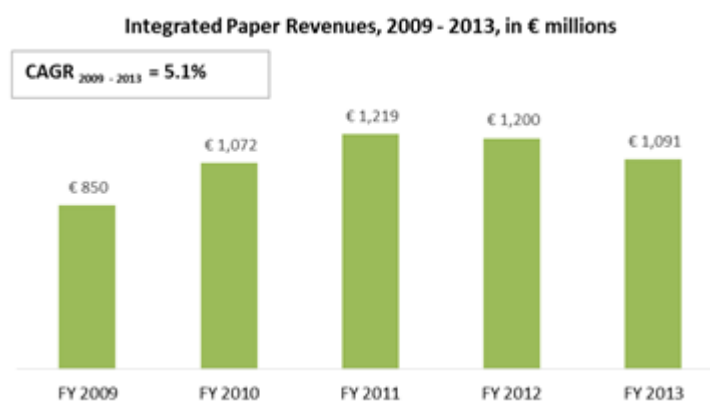


FIGURE 11: INTEGRATED PAPER REVENUES. SOURCE: COMPANY ANNUAL REPORTS

Having generated 57% of its revenues from paper in 2012, Suzano Papel e Celulose revenues were 55% derived from paper products in 2013. Paper sales were decomposed by 22% from paperboard products used in packaging and 78% from printing and writing paper. In 2013, for the printing and writing paper segment, uncoated paper was worth 78% of sales while coated paper was worth 22%, similar to 2012. These sales confer the company the leading position in terms of market share in the paperboard and coated paper segments as well as the runner-up position for the uncoated paper segment. Specifically, Suzano has 28% of the paperboard market in Brazil as well as 36% and 38% of the Brazilian coated and uncoated paper market, respectively. Besides the domestic market sales, which account for 48% of total sales, the company generates 52% of its revenues abroad.

Suzano wasn't able to sustain, in 2013, the value of paper sales achieved in 2011 and 2012. Sales grew by 14% from €1,072 million in 2010 to €1,219 million in 2011. 2012 saw a 2% reduction in sales value while in 2013 sales went down to €1,091 million, thus leading to a CAGR of 5.1% throughout the five year period. While sales values decreased in 2013, paper sales in volume, as well as production volume, remained quite stable since 2011. The 9% revenues drop of 2013 is mostly due to the 7% drop in average price paper sold (from €890 to €830 per ton).

4.1.1.1.2. Production, sales volume and capacity

Paper Production, sales and capacity volumes, in thousands of tons, 2011 - 2013

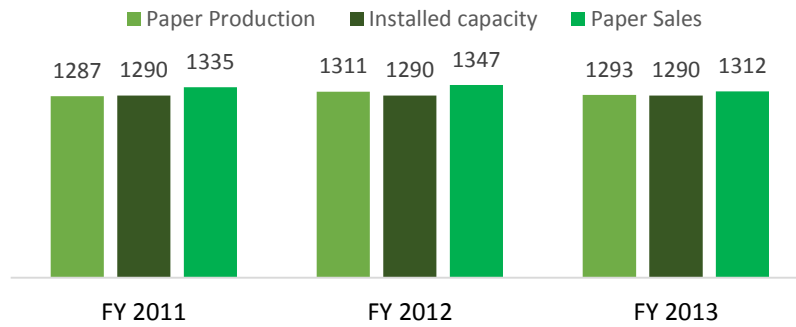


FIGURE 12: PAPER PRODUCTION, SALES AND CAPACITY IN VOLUME. SOURCE: COMPANY ANNUAL REPORTS

Sales in volume were actually marginally higher than production throughout the entire period, consequence of the inventory accumulated during 2010. In terms of capacity, Suzano’s plants can produce up to 1,290 thousand tons of paper (all three varieties combined) per year since 2011, when the expansion of one of its mills was concluded, increasing capacity by 200 thousand tons a year. During the period between 2011 and 2013, the firm was able to operate at full capacity, reflecting the ability to monetize all its production into sales with relatively ease.

4.1.1.1.3. Positioning in Brazil

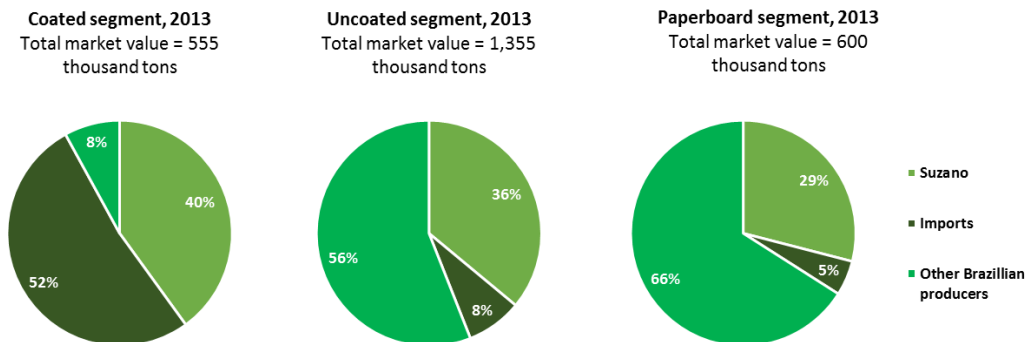


FIGURE 13: MARKET SHARE IN BRAZIL BY SEGMENT. SOURCE: COMPANY INSTITUTIONAL PRESENTATION

The Brazilian paper market is concentrated on its three main segments: coated paper, uncoated paper and paperboard. A few key players – Suzano Papel e Celulose, Klabin, Fibria and International Paper - hold more than 50% of the market share in the uncoated and paperboard segments, while a group of 10 companies produce nearly all paper consumed in Brazil. While in both the previously mentioned segments imports account for a minority of

consumption, half the coated paper consumed domestically is imported as Brazilian firms apart from Suzano, which holds 40% of the market, do not typically produce coated paper. Apart from the leading position in the coated paper segment, with 40% of the market, Suzano also leads the paperboard segment, with 29% market share in 2013. Also in 2013, the firm achieved a 36% market share in the uncoated paper segment (see Figure 13).

Besides holding the leading position in all paper segments domestically, Suzano also distributes its paper products overseas. In terms of geographical diversification in 2013, it is clearly observable that the firm is focused in South America – 69% of paper is sold in Brazil and another 13% is sold in the remaining countries of South and Central America, thus 82% of sales are made in the region. In addition to regional sales, it sells 5% and 12% to Europe and North America, respectively. Overall, it can be concluded that Suzano has a large domestic and regional exposure, in its paper business segment, contrarily to the pulp segment, where sales are spread throughout the globe.

4.1.1.2. Pulp

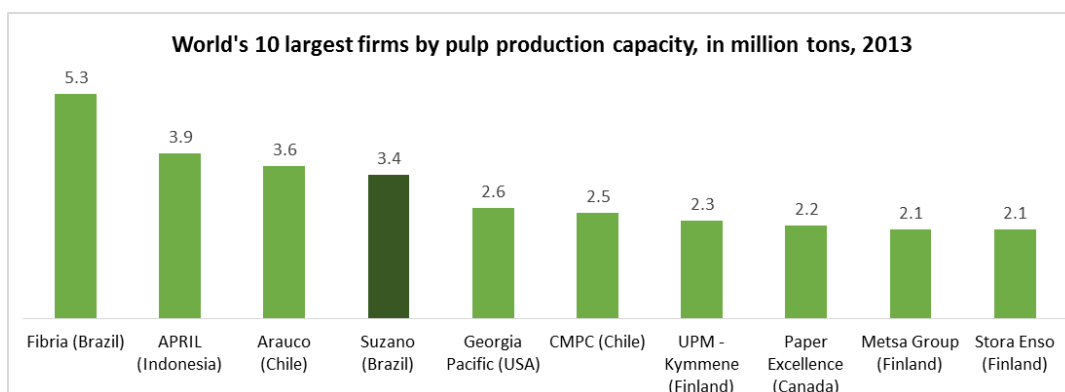


FIGURE 14: TOP 10 PULP PRODUCERS, BY VOLUME. SOURCE: HAWKINS WRIGHT (2014)

Suzano is set to achieve the status of the world's fourth largest player in terms of pulp capacity in 2014, when the expansion of one of its mills (the Maranhão mill) is concluded. Capable of producing 3,4 million tons of pulp, the scale achieved by this Brazilian firm is only matched by 3 other firms (see Figure 14). The Brazilian territory contains, by far, the most productive forest lands in terms hardwood production – one hectare of eucalyptus planted in Brazil yields 41 m³ of hardwood annually, which compares with an annual yield of 31 m³, 15 m³ and 6 m³, for China, the USA and Finland, respectively. Being the main component in pulp production, hardwood cost has a relatively large impact on the cash cost of pulp. In turn, the cost of hardwood depends largely on the yield one can achieve from their planted forests. In light of

these facts, it is no surprise that Brazil is able to produce the cheapest pulp in the world. The most recent figures available point to an average cost of \$350 per ton of pulp produced in Brazil, while the same amount would cost \$523 in the US. As pulp is a commodity whereby producers are price takers, players compete mainly on price, thus making firms operating on areas with low pulp production costs more profitable. While this might be the case for Suzano, its success is not exclusively due to its privileged location. The firm evolved into a large and complex organization specialized in managing eucalyptus forest lands, operating state-of-the-art pulp and paper mills and distributing its production throughout the globe.

4.1.1.2.1 Revenues

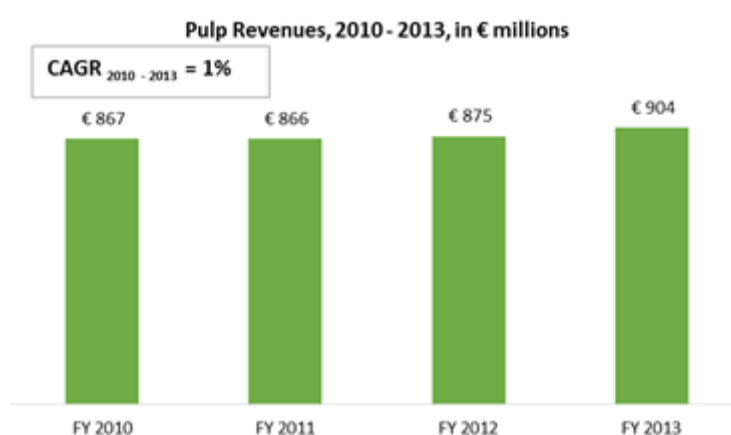


FIGURE 15: PULP REVENUES. SOURCE: COMPANY ANNUAL REPORTS

Pulp sales were €904 million in 2013, up 3.3% from €875 million in 2012 (see Figure 15). The CAGR for the period stood at 1%, from €867 million in 2010, similar to the figure for sales in volume (CAGR = 1.1%). Similar sales growth rates in volume and value indicate that the third variable, average selling price per ton of pulp, has remained stable throughout the period. The average selling price per ton of pulp was €479 in 2011, €474 in 2012 and €478 in 2013, in line with the price from the benchmark BHKP.

4.1.1.2.2. Production, sales volume and capacity

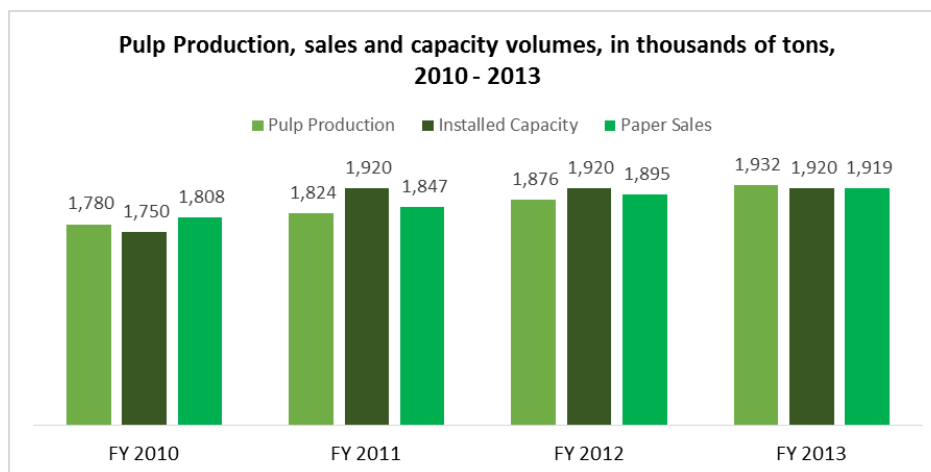


FIGURE 16: PULP PRODUCTION, SALES AND CAPACITY IN VOLUME. SOURCE: COMPANY ANNUAL REPORTS

Pulp installed capacity increased from 1,750 thousand tons in 2010 to 1,920 in 2013, a 10% increase occurred in 2011, consequence of the expansion in one of their industrial units. Following came the expansion of Suzano's Maranhão plant, which conclusion is expected by the end of 2014, adding 1,100 thousand tons of annual pulp capacity to the company, a 57% increase from its current figure. With this investment, the Maranhão plant will reach the Mucuri plant in annual pulp capacity, at around 1,500 thousand tons.

Regarding pulp production, the firm has been operating at full capacity since 2010 through to 2013. In fact, production even slightly exceeded capacity in 2010 and 2013. The lowest production volume relative to capacity installed was recorded in 2011, when it stood at around 95%, still far above the industry running average of around 70%. In 2012, this figure increased back to around 98%, making 2012 an isolated figure reflecting the fact that the organization was merely accommodating the increased capacity. As capacity didn't increase from 2010 onwards, the output of pulp has remained stable throughout the period. The CAGR was 2%, as production increased every year during the period, from 1,780 thousand tons in 2010 to 1,920 thousand tons in 2013.

In terms of quantities sold, Suzano sold all its output produced in the period, between 98% and 99% of its production throughout the period in analysis. These figures should not be surprising in light of the firm's production being equal to its capacity – under normal conditions, the firm produces only what it can sell.

4.1.1.2.3. Geographic Segment

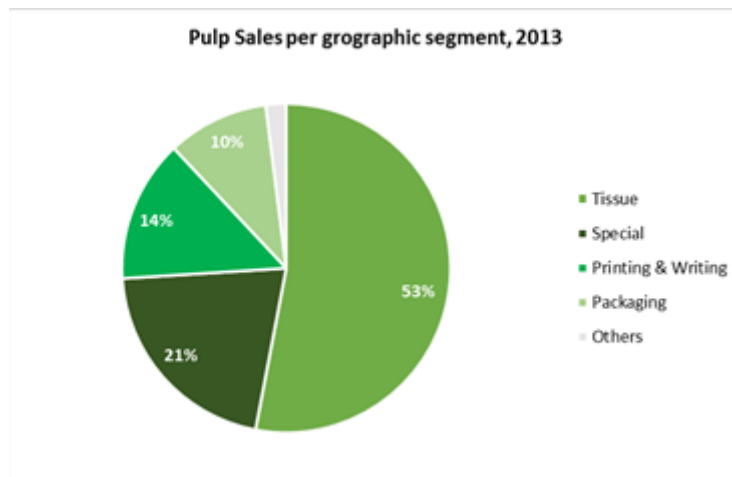


FIGURE 17: PULP SALES BY GEOGRAPHIC SEGMENT. SOURCE: COMPANY INSTITUTIONAL PRESENTATION

Lastly, in terms of geographic segment, the Brazilian based firm serves a wide range of customers throughout the globe. These customers are typically non-integrated paper producers, or integrated paper producers running a pulp deficit, which source their pulp needs from the international pulp markets, of which Suzano is one of the key players. Only 22% of total pulp sales, in volume, were sold domestically, in 2013. About a third of the firm's customers are located in Europe and another third in Asia, in terms of volume purchases. North America and South and Central America were the remaining export markets in 2013, with 10% and 1% share, respectively (see figure 17).

4.1.2. Costs

4.1.2.2. Cost of Goods Sold

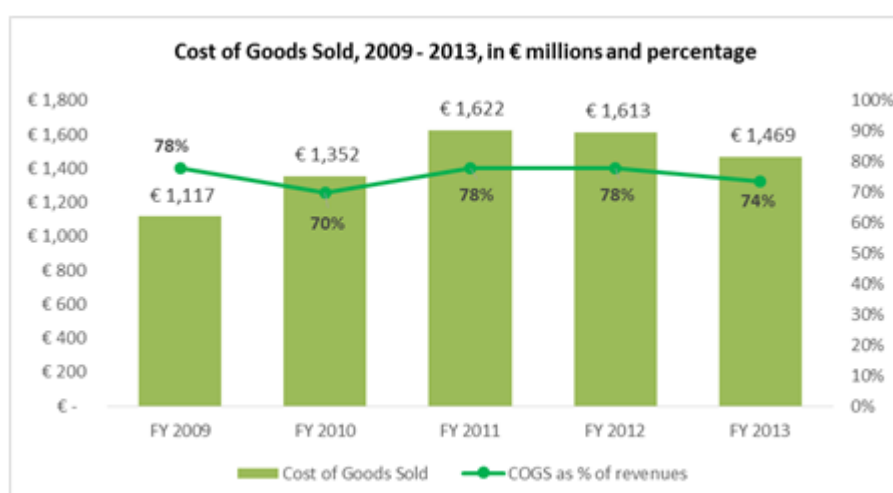


FIGURE 18: COGS. SOURCE: COMPANY ANNUAL REPORT

Cost of Goods Sold ARE the total costs used to create a product or service, which has been sold. These costs fall into the general categories of direct labor, materials consumed, and overhead. In the pulp and paper industry, COGS are mainly composed of factory workers wages and other related costs (direct labor), wood and/or pulp purchases, chemicals, energy and other products used in the production process (materials consumed) and overhead costs which are fixed costs which are incurred despite the level of production.

The cost of goods sold CAGR amounted to 5, 64% in the 5-year period between 2009 and 2013, beginning at €1,117 million, in 2009, peaking in 2011, at €1,622 million, and going down to €1,469 million in 2013 (see figure 18), similarly to the path of revenues, which grew faster than costs, at 6.8%. As revenue growth outpaced COGS growth, the firm's gross profit margin improved, dictated by a lower proportion of COGS in revenues. The cost of the products sold was 77.9% of the price Suzano got for those products, in 2009. In other words, the firm spent close to €0.78 in producing each €1 of product sold, thus making a gross profit of €0.22. In 2010, this ratio improved significantly – the firm generated close to €2 billion in revenues spending €1,352 million producing its products (paper and pulp), thus improving the proportion of COGS to revenues to 69.8%, i.e., making a gross profit of roughly €0.30 for each euro of pulp and paper revenues.

The increase in the period was primarily due to the increase in units sold. Besides that, wood prices have went up since 2012 and real exchange rate against the dollar has been devalued. Although this drives up the competitiveness of its products abroad, thus allowing for price increases, the production products that Suzano must import, namely chemicals, become more expensive. Lastly, fixed costs dilution also played a role in improving the proportion between revenues and fixed costs.

4.1.2.2. Operating Costs

4.1.2.2.1 Sales Expenses

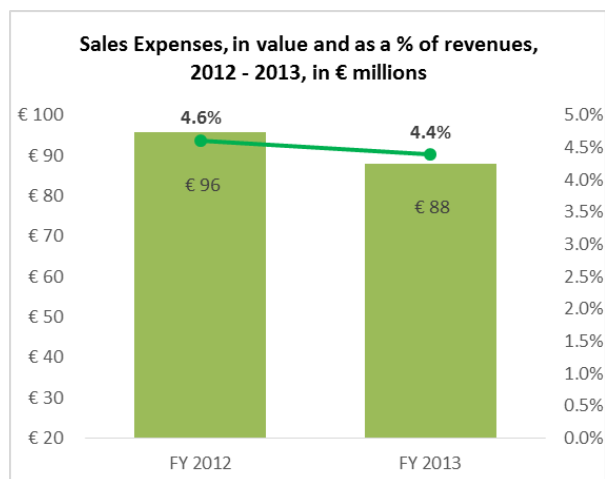


FIGURE 19: SALES EXPENSES. SOURCE: COMPANY ANNUAL REPORTS

Sales expenses amounted to €88 million in 2013, down 8% from €96 million in 2012. As a percentage of revenues, the situation improved – selling expenses decreased by 0.2% from 4.6% to 4.4%, consequence of the implementation of cost control processes and actions, which are set to continue in the future as further cost efficiencies are achieved.

4.1.2.2.2. General and Administrative Expenses

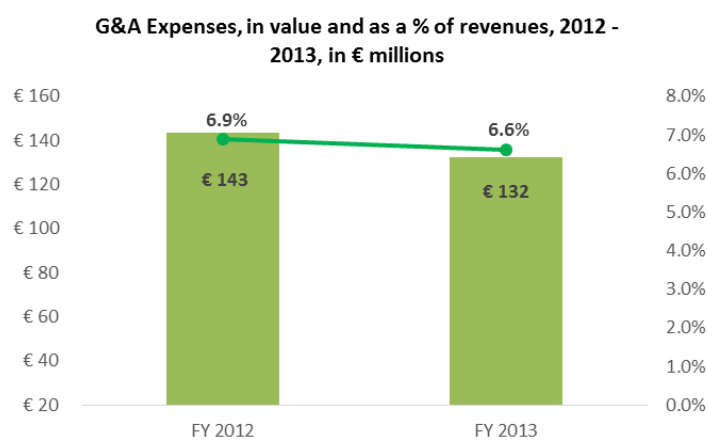


FIGURE 20: GENERAL AND ADMINISTRATIVE EXPENSES. SOURCE: COMPANY ANNUAL REPORTS

General and Administrative expenses were down 0.3% to 6.6% in 2013, consequence of the implementation of newly created cost control processes, which also decreased sales expenses, and due to the reduction of expansion projects spending. Overall, these expenses stood at €132 million.

4.1.3. EBITDA (Earnings before interest, depreciations and amortizations)

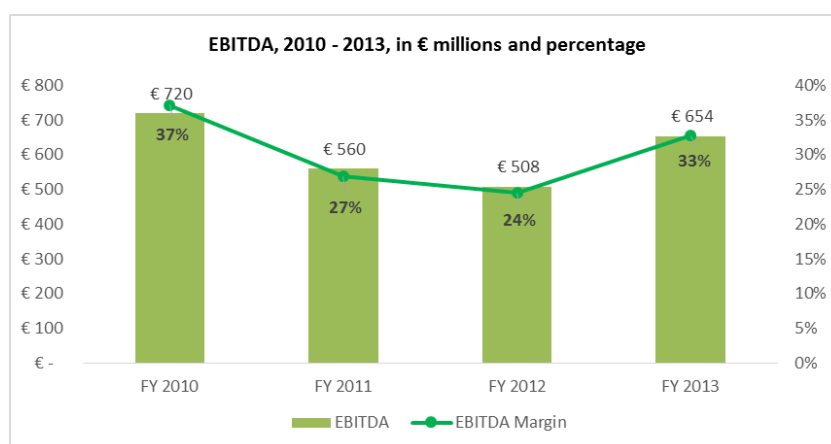


FIGURE 21: EBITDA. SOURCE: OWN CALCULATIONS, COMPANY ANNUAL REPORTS

EBITDA was positive throughout the period, although never reaching the maximum of €720 million in 2010. For that reason, CAGR was negative (-2.4%) despite EBITDA growing by 29% from 2012 to 2013, from €508 million to €654 million. EBITDA captures the operational profitability of a business, leaving aside financing and the replacement cost of its assets in place (depreciations). Therefore, the results achieved over the period are explained by changes in the various components of its operational revenues and expenses. Furthermore, being a company which exports and imports a very substantial share of its inputs and outputs, respectively, exchange rate changes, particularly the behaviour of the Brazilian real vis a vis the US dollar, have a deep impact on the operational results of the firm. From 2012 to 2013, the Brazilian real depreciated vis a vis the US dollar. Because the firm has substantially higher exports than imports, in value, a weaker real is beneficial for the firm, because more expensive imports, in real terms, are more than compensated by more valuable exports, in real terms. Besides the depreciation of the real, which contributed to improve the results in 2013, pulp and paper prices increased in the international markets, improving the average selling price for the firm's pulp and paper products. Wood costs also rose in Brazil, having an adverse effect on the firm, which is a net buyer of wood. A fourth contribution to the improved results over the last year has an endogenous nature. As it was previously highlighted, Suzano launched cost cutting initiatives which streamlined processes and increased productivity. That translated into lower sales, administrative and general expenses, as a percentage of sales, which in turn led to a higher EBITDA.

4.1.4. CAPEX

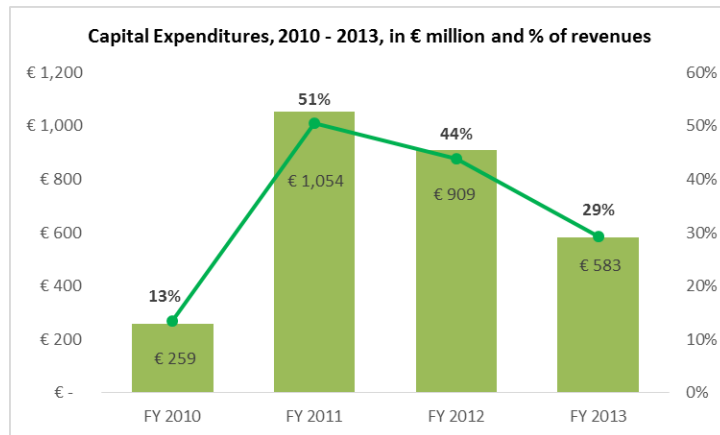
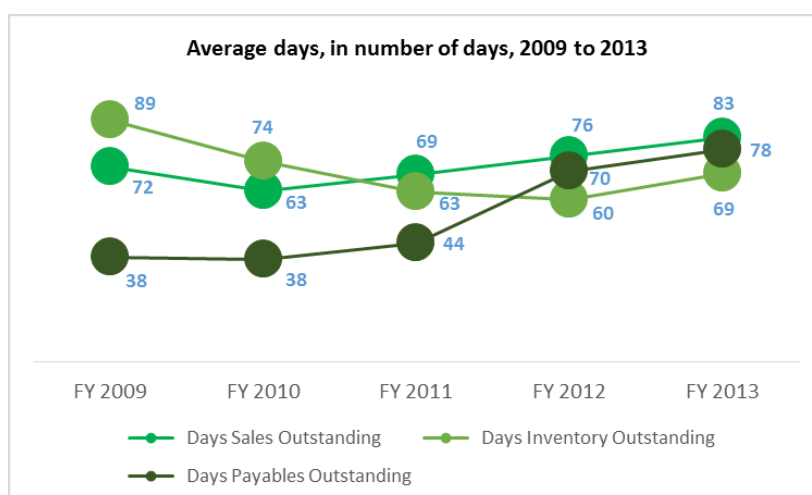


FIGURE 22: CAPITAL EXPENDITURES. SOURCE: COMPANY ANNUAL REPORTS

Capital expenditures went from €259 million in 2010, amounting to 13% of revenues, to €1,054 million just one year after that, more than half the value of revenues. This was the consequence of the investment in the new pulp mill in Maranhao, which was developed from 2011 to 2013. However, the bulk of the investment needs were in 2011 and 2012. In 2013 CAPEX decreased to €583 million. With the new mill project concluded, investments will decrease sharply, as they have rose from 2010 to 2013. Other CAPEX needs include energy investments in biomass plants integrated in the pulp and paper mills, investments in the logistics department of the firm. Furthermore, investments in updating and increasing the efficiency of assets in place are also a constant. The firm has no project of developing a new industrial unit in the foreseeable thus CAPEX will become majorly allocated to the abovementioned areas.

4.1.5. Working Capital



In terms of the length it takes for Suzano's clients to pay for sales, since 2010, each year it takes the company longer to receive payment for its sales. While in 2009 it took a client an average of 72 days to liquidate an invoice, in 2010 that time went down 9 days, to 63 days. Afterwards, the average length, in days, increased by 6 to 7 days, a year, reaching 83 days in 2013. A constantly increasing length of sales outstanding is adverse for the firm, which has to, *ceteris paribus*, invest more in working capital – thus diverting cash flows from servicing the high debt pile to investment in working capital.

The average number of days inventories are kept internally was 69, in 2013, up from the minimum of 60 days, in 2012. The CAGR was minus 4.9%, reflecting a downward trend observed since 2009 until 2012. Suzano's average number of days of inventory outstanding is, and is likely to be, similar at least two months for two main reasons: on one hand, because they source their production inputs from abroad, therefore ordering in large quantities to bring down transportation costs per unit while achieving better pricing, i.e. quantity discount. On the other hand, the firm cannot extract its raw material just-in-time for pulp production – the forests must be managed in a sustainable way and there are times of the year when they must extract wood to stock for other periods of the year.

Accounts payable are also increasing as a proportion of COGS, at a faster growth rate than sales, starting at 38 days in 2009 and reaching 78 days in 2013 (CAGR = 15.3%, see figure XX), catching up with the average length of sales outstanding.

4.1.6. Debt

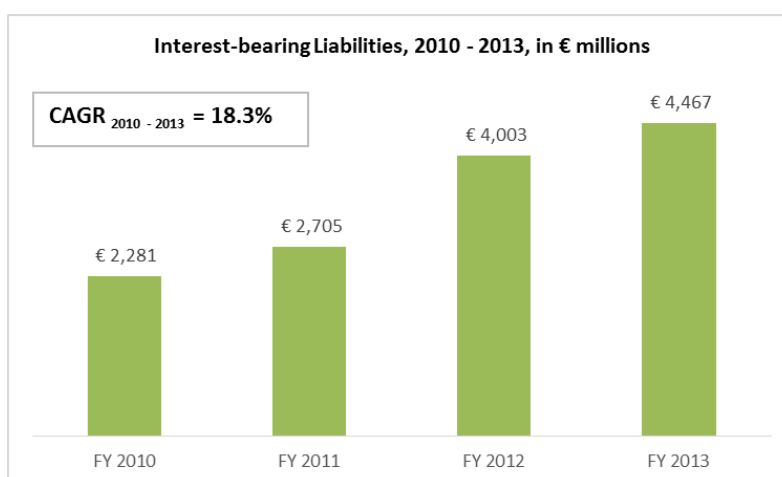


FIGURE 23: INTEREST-BEARING LIABILITIES. SOURCE: COMPANY ANNUAL REPORTS

The firm nearly doubled its debt outstanding over the past four years, from €2.3 billion to €4.5 billion, approximately, a CAGR of 18.3%. The firm has borrowed from banks as well as from the capital markets, in the form of bonds and debentures. Export financing, which composes the bulk of current debt, has banks as counterparts. Long term debt is typically borrowed from the capital markets, both domestic and internationally, mostly in US dollars denominated markets.

Suzano has experienced a fast growing debt pile in recent years due primarily to the development of the large scale project of the Maranhão unit – the largest single project the firm has ever undertaken. The project, which required an investment of nearly €2.5 billion, financed by long term debt, was very demanding due to its relative large scale – the pulp mill will double the value of assets allocated to the pulp segment and pulp annual installed capacity will increase by 80%.

By 2013 the new plant will be concluded and the installed capacity is forecasted to be rapidly fully used, thus boosting earnings and increasing free cash flows. The firm has accumulated large amounts of debt since 2010 and, according to the information in the annual report of 2013, the situation will be reverted from 2013 onwards, i.e., a deleveraging process will ensue.

4.2. Portucel

Portucel owns and operates pulp and paper mills and manages forests in Portugal. Additionally, a pulp plant in Mozambique is under the development stage, in line with the goal of geographical diversification of production. The output of the Mozambique's plant will be market pulp, to be sold in the international markets, namely Asia. In Portugal, it owns three

plants (Setubal, Cacia and Figueira da Foz), producing uncoated printing & writing paper and bleached eucalyptus kraft pulp. At the end of 2013, the company had 2,259 employees. In terms of ownership structure, SEMAPA controls approximately 75% of the issued shares while 6.56% are allocated to treasury stock. The company is listed in the PSI 20, the main Portuguese stock index, with a float of 26.4% of outstanding shares. The company had a market capitalization of €2,563.5 million as of 09/04/2014.

4.2.1. Revenues



FIGURE 24: TOTAL REVENUES. SOURCE: COMPANY ANNUAL REPORTS

Portucel achieved all time high revenues of just over €1,550 million in 2013. These results reinforced the stable revenue trend since 2011 – CAGR stood at 1.4% in the 2011 to 2013 period. Expanding the analysis into the last five years, CAGR increases to 6.6%, from 2009 to 2013. In fact, revenues grew 24.4% from 2009 to 2010 and 7.8% from 2010 to 2011.

The uneven growth path of Portucel’s revenues can be explained by looking at two key variables – paper prices and installed capacity. Portucel derives most of its revenues from paper products, which price tends to be stable throughout time. On the other hand, the company’s plants have operated near full capacity throughout the 2009 – 2013 period, as well as in a more distant past. This scenario in which the company operates yields persistently stable revenues as long as the company does not invest in expanding its installed capacity. Indeed, stable prices and output volume are the reason for stable revenues since 2011. By contrast, the large investment the company made in increasing its capacity substantially before 2009 allowed double digit growth in the 2009 -2011 period (CAGR = 10.3%). Pulp

capacity, on the other hand, stood at 1,337 thousand tons. The company's lack of capacity dictated stagnant revenue since 2011.

Overall, it can be concluded that Portucel's growth was organic in the last five years, the result of a greenfield investment in a new paper mill and improvements in the efficiency of existing assets. Analyst consensus and company managers agree that a growth model based on organic growth domestically will be difficult to maintain because of lack of raw material – Portugal has a very limited output of eucalyptus wood, not enough to supply Portucel.

4.2.1.1 Revenue by product

Portucel is an integrated producer, consuming around 80% of the pulp internally produced (only the pulp output from the Cacia mill is market pulp). With the opening of the new paper mill in Setubal, Portucel was able to integrate more pulp output into its paper production operations. Consequently, a gradual decrease in the weight of pulp was counterbalanced with a steady increase of the weight of paper in Portucel's total revenues, from 2009 to 2013.

Also under expansion during the period was the company's energy production from biomass. The company increased revenues in this segment from €86 million to €180 million (CAGR = 20.2%), from 2009 to 2012, respectively. Portucel has a permanent deficit of wood which explains the residual and shrinking sales of woodchips. Overall, it can be observed that the company became more integrated and energy self-sufficient throughout the period.

4.2.1.1.1. Paper

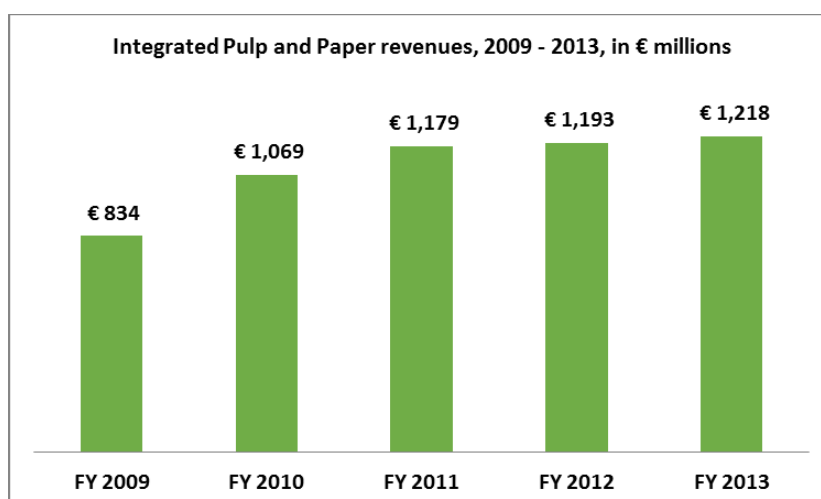


FIGURE 25: INTEGRATED PULP AND PAPER REVENUES. SOURCE: COMPANY ANNUAL REPORTS

Portucel derives its paper revenues from uncoated printing and writing paper (UWF paper). The benchmark for its paper prices is the FOEX PIX A4 B Copy price index. Portucel paper prices were relatively stable throughout the period, reflecting the stable behavior of the benchmark index. However, the new mill in Setubal, Europe’s most efficient mill and one of the largest of its kind in the region, has brought another 500 thousand tons of capacity to the existing 295 thousand tons, in 2009. This has made revenues for the integrated paper division surge 46% from 2009 to 2013 (from approximately € 833 million to € 1,218 million), a 7.9% CAGR (see figure 25). All in all, Portucel expanded from 1,050 thousand tons of annual paper capacity in 2009 to 1,595 thousand tons in 2013, due primarily to the new mill but also to efficiency improvements in the existing mills. Portucel has managed to operate at full capacity over the whole period. The company was able to swiftly sell all its new output resulting from the increased expansion – full capacity was reached in late 2010, a year after the new mill started operating, and this was sustained throughout subsequent years.

4.2.1.1.2. Paper revenue by market segment

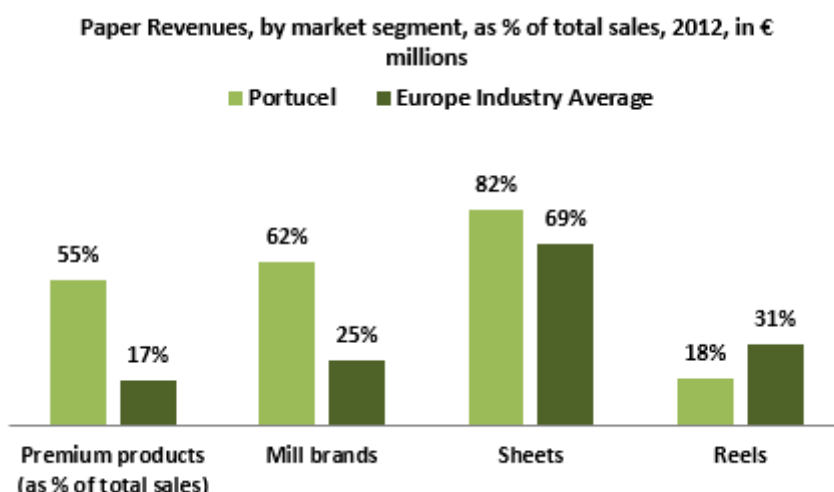


FIGURE 26: PAPER REVENUES BY MARKET SEGMENT. SOURCE: COMPANY ANNUAL REPORT

In terms of product mix, Portucel strategic positioning is to expand its sales in premium segments, marketed under their proprietary brands (also known as mill brands). Portucel has a 55% weight of premium products in its product mix, which compares with 17% average for its European peers. Proprietary brands, on the other hand, allow Portucel to minimize distribution costs and capture the margins for the whole paper value chain. In 2012, 62% of its sales were from own brands, directly sold to retailers and end users. European paper producers sold a

quarter of its products through proprietary brands, reflecting a larger reliance on third party distributors to handle the downstream activities of the value chain.

4.2.1.1.3. Pulp

Portucel’s UWF type of paper is produced with bleached eucalyptus kraft pulp as an input. Because of their ongoing integration efforts, the company only produces this type of pulp. Most of it, around 80%, in 2013, is internally consumed by its paper mills and the remainder is market pulp. The benchmark for pulp selling prices is the FOEX PIX BHKP index.

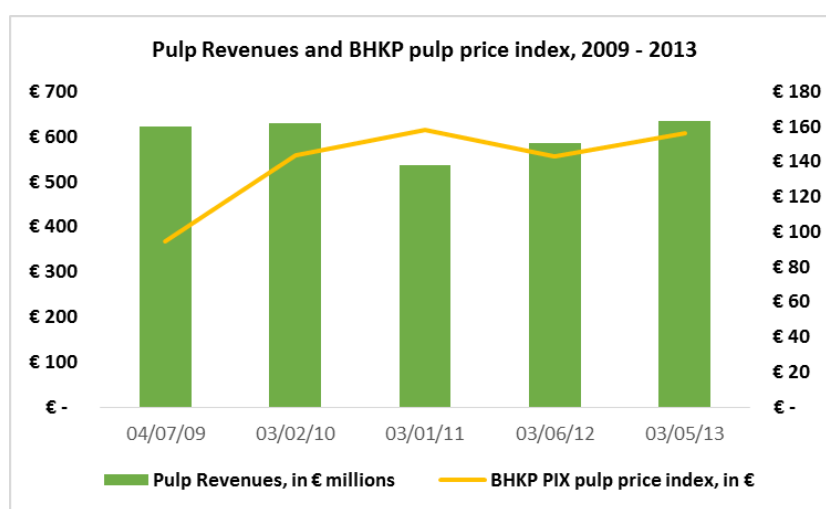


FIGURE 27: PULP REVENUES AND PULP PRICE INDEX. SOURCE: COMPANY ANNUAL REPORTS AND FOEX INDEXES

Portucel sold approximately € 163 million of BEKP (bleached eucalyptus Kraft pulp) in 2013, 8.3% more than in 2012 (€ 151 million). Throughout the 2009 - 2013 period, the CAGR was 0.4% although sales declined in 2011 and recovered in 2012 (see figure 27). To understand the rather volatile behavior of pulp sales in this period, one must again turn to market prices and installed capacity. Pulp is a commodity which shares the typical feature of most commodities – producers are price takers, meaning pulp producers are subject to market prices they cannot control. Therefore, Portucel’s pulp sales price is, to a large extent, set by the FOEX PIX BHKP index. This index shows that pulp price is very volatile, typically peaking in unsustainable levels, where most non-integrated paper producers generate a loss on their production, followed by price decreases in periods where paper production decreases, creating limited demand for pulp.

Pulp capacity had a slight increase (2.8%) over last five years, to 1,375 thousand tons result of investments to improve and retain efficiency in the three existing mills. Similar to its paper mills, Portucel operates at full capacity in its pulp segment. Setubal and Figueira da Foz pulp

and paper mills are integrated – not only does all the pulp produced in these two plants is integrated, but pulp needs have actually been higher than the output, since 2012. To fill that gap, a part of Cacia's production has been integrated, the rest being market pulp. Overall, around 15% of pulp is sold and 85% integrated. Expansion of existing plants or development of new plants is not a viable option in Portugal, according to Portucel's management, as the main raw material, eucalyptus wood, is not available domestically and can only be imported at prices which would make the project unprofitable.

Portucel new, state-of-the-art paper mills allow the company to operate at full capacity even though most of its European peers face excess capacity. Efficiency and scale economies result in substantially higher margins than the European industry average, around 11%. EBITDA margins for the last three years (2010 – 2012) were kept similar to historical levels. These levels of profitability were achieved through efficiency gains in the new paper mill which offset the higher costs of wood due to the lack of this raw material availability in Portugal

4.2.1.1.4. Revenue by geographic segment

The European region is the main market for Portucel products. Its revenue share decreased by 2%, from 80% to 78%, although sales in the region grew 9.9% annually, from 2009 to 2012. Sales also grew in the remaining regions: in America, sales grew 21.7% per year and 11% of revenue came from the region in 2012 while the Rest of the World segment, mostly composed by Asian countries, remained rather constant in terms of share but grew 9.3% in the period. Overall, the high exposure to regional markets characteristic of paper companies can be observed in Portucel.

4.2.1.1.5. International Expansion

Portucel's limited ability to grow organically in Portugal and the Iberian Peninsula pushed management to consider and pursue overseas projects in emerging markets. Portucel has made a greenfield investment in Mozambique to develop an integrated eucalyptus plantation, pulp and energy project estimated at \$2.3 billion. The phase I of the project, an eucalyptus plantation covering 60,000 ha, is already undergoing and has the potential to reach 350,000 ha of forest land. The plant's development is expected to start when the forestry operations are ready to yield enough raw materials for the plant's operation. Sales of these operations will be mainly pulp to Asian countries, such as China and Indonesia. According to a 2013 corporate presentation, Mozambique's investment is part of the strategic vision of Portucel focused on expanding operations into Africa and Latin America, close to available forest land and high

growth paper and pulp markets. However, this project is still in its inception and won't generate revenues in the foreseeable future.

4.2.2. Costs

Portucel's operational costs were up from just over € 1 billion in 2010 to € 1.215 billion in 2013, a CAGR of 5% in the period. Revenues had a CAGR of 2.6% over the same period, meaning costs increased faster than revenues, thus crushing operating profits. To understand Portucel's operational cost structure, its evolution and correlation with revenues throughout the 2010 – 2013 period, an analysis of its operational costs segmented by nature and by product is due.

4.2.2.1. Costs by nature

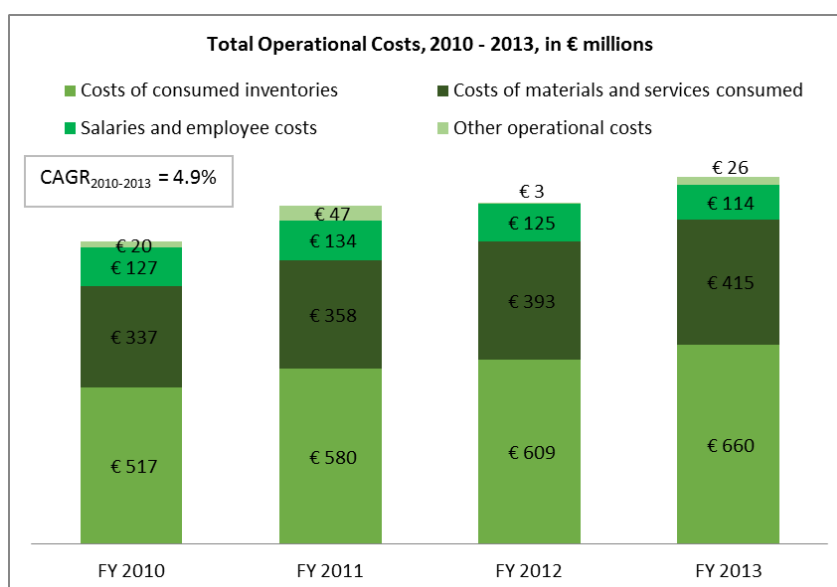


FIGURE 28: TOTAL OPERATIONAL COSTS. SOURCE: COMPANY ANNUAL REPORTS

Operational costs grew by 5% a year from 2010 to 2013, from just over €1 billion in 2010 to €1.215 billion in 2013. These costs include mainly three items, similar to what happens in most industrial firms: costs with inventories, costs with materials and services consumed and labor costs. Although other types of costs exist, they are not materially relevant, therefore this analysis focus only on the abovementioned three components. Portucel maintained a rather stable operational cost structure throughout the period. However, the key components of the operational cost structure of this industrial firm changed overtime, consequence of both internal and external factors.

Consumed inventories are mainly composed of raw materials consumed in the paper and pulp making process – namely eucalyptus wood as pulp production input and pulp as paper production input. Furthermore, several types of chemical products are consumed in pulp and paper mills (e.g. chemicals which color paper). Consumed inventories represented more than half of its operational costs, ranging from 52% to 54% throughout the period. Overall, these costs had a CAGR of 6% in the period, from €517 million to €660 million. This increase is justified by an increase in the price of eucalyptus wood, which has to be increasingly sourced outside Portugal as well as the boost in paper chemical prices in recent years.

Salaries and employee costs weight on total operational costs decreased from 13% to 9%, in 2010 and 2013, respectively. Put another way, these costs decreased from €127 million in 2010 to €114 million in 2013, a CAGR of -3%. In a context of rising production and revenues, this value clearly shows that Portucel managed to increase its productivity in the period while labor costs in Portugal decreased as a consequence of the economic crisis.

4.2.3. Operational Profit

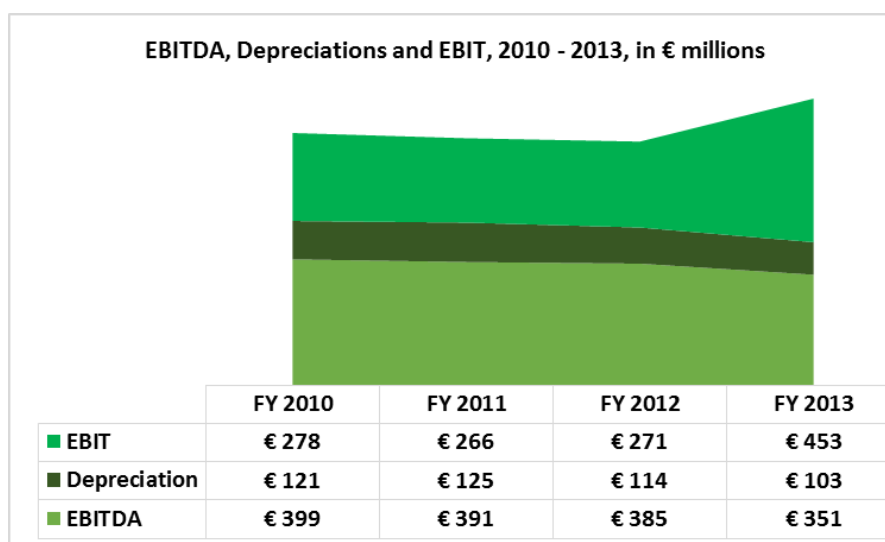


FIGURE 29: EBITDA, DEPRECIATIONS AND EBIT. SOURCE: COMPANY ANNUAL REPORTS.

EBITDA offers a clearer reflection of operations by stripping out expenses that can obscure how the company is really performing. It excludes interest payments – and thus capital structure decisions – and taxes. In addition, it ignores depreciation and amortization expenses, which have subjective calculation procedures, sometimes being misleading.

In 2013, the EBITDA fell short of the 2012 figure (approx. €336 and €400 million, respectively), a sharp 16% fall, breaking the stable trend of results observed since 2010. Although revenues

grew throughout the period, costs grew at faster pace, pressuring the margin downwards. And despite the fact that operating margin fell from 28% in 2010 to 22% in 2013, Portucel still outperforms its European, and global, peers (the industry EBITDA average stands at around 11%) (See Figure 29).

4.2.3.1. Operational Profit by product

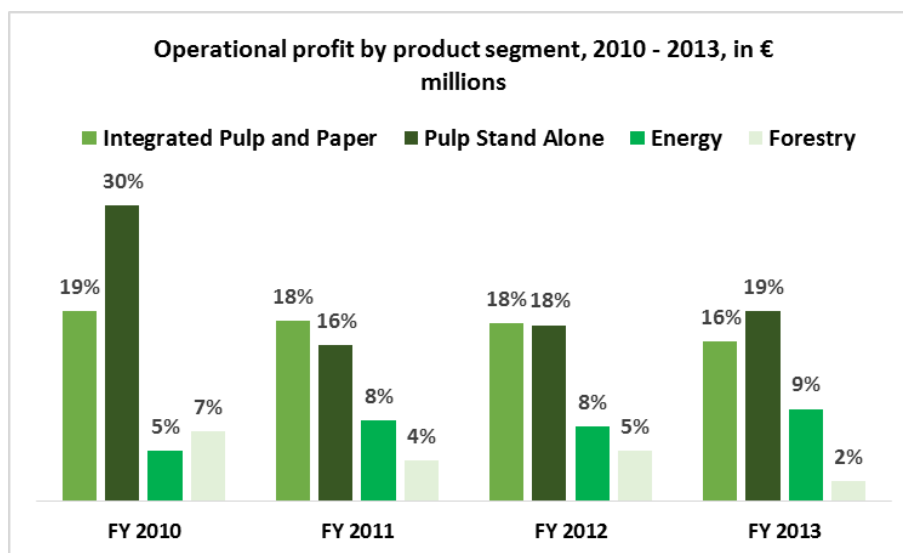


FIGURE 30: OPERATIONAL PROFIT BY PRODUCT SEGMENT. SOURCE: COMPANY ANNUAL REPORTS

Most of Portucel’s operations are dedicated to paper and pulp production. As a consequence of the latter being mainly integrated into paper production, most of the profits (59% in 2013, and 54% in 2012) are generated by the paper business. The margin for this segment, however, declined 3% in 2013, after being stable in the previous three years. This was a consequence of rising input costs, namely wood and chemicals used in the manufacturing process, as paper prices remained very stable throughout the period. Despite this decrease, the ability to produce paper sold at a premium and without recurring to distributors has made Portucel able to secure higher profit margins in its paper segment than its peers.

The pulp standalone segment has been reducing its weight on Portucel’s profits (from 12% in 2010 to 6% in 2011 and up again to 9% in 2013), largely a consequence of the increased integration of pulp output into paper production. Besides, the profit margins in this segment shrank from 30% in 2010, when average sales prices plummeted in the second quarter of 2011. The profit margin went up again in 2012 and remained stable through 2013, yet far below 2010 levels. This is a consequence of the integration of more pulp when the new mill started operation in late 2010. In terms of capacity, pulp mills increased their capacity slightly through

increased efficiency, not enough to compensate for the integration of pulp in the paper mill. Overall, Portucel managed to achieve greater profit margins than the industry average throughout the period.

The forestry business presents a trend of shrinking margins – in 2013, the margin stood at 2% compared with 7% in 2010. This segment has a small weight in the firm’s overall profitability and it is geared towards a role of providing input for production rather than a profit center. This segment also faces constraints from the lack of raw material available in Portugal - the forest land available is not enough to fully supply Portucel’s needs. This leads to a deficit situation which has been compensated by importing wood, which yields higher costs due to expensive transportation (the unit cost of transporting wood is very high due to its weight/price ratio).

Finally, the energy segment profit margin remained stable in the last three years, between 8% and 9%. The investments in co-generation biomass plants have been increasing revenues from this segment and profit margins have accompanied this trend.

4.2.4. CAPEX

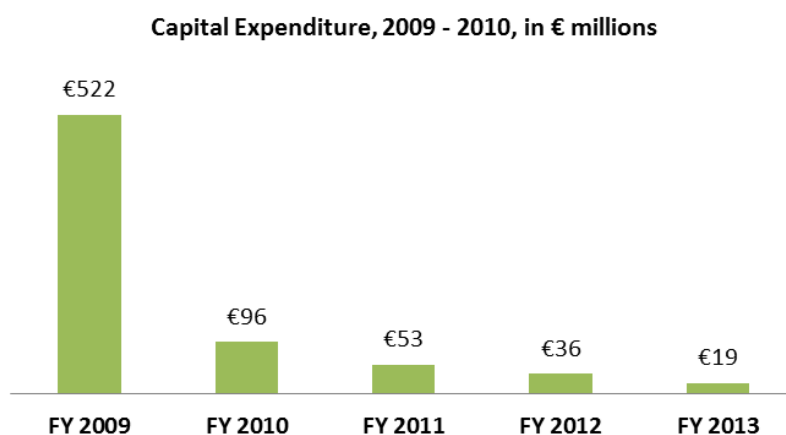


FIGURE 31: CAPITAL EXPENDITURES. SOURCES: COMPANY ANNUAL REPORTS

Capital expenditures were €522 million in 2009, largely channeled to the Setubal mill which was under construction in the period. Since 2010, with the plant ready to operate, Portucel’s plants, which are its main fixed assets, didn’t need any further investment and the company hasn’t taken up on any new development projects throughout the period. With new, state-of-the-art plants and absence of new fixed asset investments, capital expenditures remained low throughout the period (1.2% of revenues in 2013).

The company recently announced an expansion project in one of its pulp mills, amounting to €56 million. Besides this investment, the lack of raw material to expand production and the low capital investment required in the existing mills indicates that low CAPEX will be persistent in the foreseeable future.

4.2.5. Net Working Capital

Net working capital is calculated as the difference between the sum of the cash balance, the accounts receivable and total inventories minus accounts payable, all 31 of December figures.

$$\text{NWC} = \text{Cash and Cash Equivalents} + \text{Accounts Receivable} + \text{Total Inventory} - \text{Accounts Payable}$$

Portucel's working capital structure remained stable between 2012 and 2013. The company accumulates large cash balances relative to revenues (22% and 34% in 2012 and 2013, respectively). In terms of payment schedules, clients pay their accounts outstanding in around 45 days – figure which didn't change in this two year period - while Portucel decreased the time it took to pay suppliers from 94 days in 2012 to 74 in 2013. In terms of the inventory cycle, the company generates sales from inventories which are stocked for an average of 80 days.

The net result of Portucel working capital structure is that it has positive working capital needs which increase with sales. Indeed, Portucel's current assets are much larger than its current liabilities – especially because inputs are purchased and kept in the firm for almost three months before being converted into sales and because the large cash balances the firm accumulates. This creates an imbalance which originated positive working capital of €496 million in 2012 and €727 million in 2013. The investment in working capital was thus close to €35 million in 2013.

in €, 2012	
Total Inventory	Accounts Payable
212,387,683	233,848,436
Accounts Receivables	Net Working Capital
188,359,334	496,267,030
Cash & C. Equivalents	
329,368,449	

in €, 2013	
Total Inventory	Accounts Payable
202,925,486	201,052,536
Accounts Receivables	Net Working Capital
200,812,149	726,978,782
Cash & C. Equivalents	
524,293,683	

4.2.6. Interest-bearing Liabilities

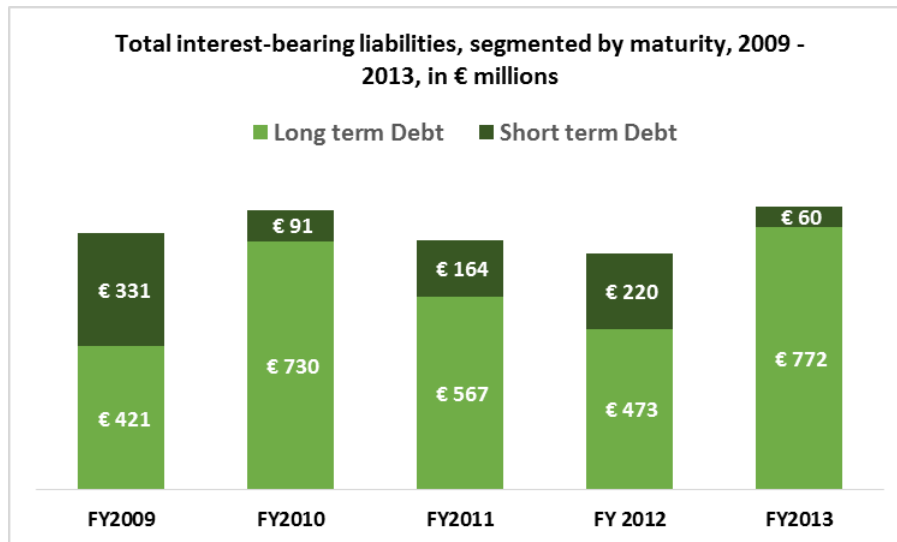


FIGURE 32: TOTAL INTEREST-BEARING LIABILITIES. SOURCE: COMPANY ANNUAL REPORTS

Interest-bearing liabilities have been stable, in absolute terms, throughout the 5 year period (see Figure 32). From €752 million in 2009, the minimum occurred in 2012 (€693 million) and the maximum was in 2010 and 2013 (€821 million and €831 million, respectively). The firm has allowed debt to vary little in absolute terms over the period, however, as a percentage of revenues, debt has shrank from 69% in 2009 to 54% in 2013.

In terms of maturity, Portucel doesn't show a clear trend or target ratio between short term and long term interest-bearing liabilities. Specifically, short-term debt has fluctuated between 8% and 79% of long-term debt, in 2009 and 2013, respectively. This fluctuation is explained by

two key aspects: the first is that some large long-term debt issues matured in less than one year in 2009; the second is due to the extremely tight credit conditions Portuguese firms operated in since 2010, especially the corporate bond markets, which led many to finance themselves in with shorter-term maturities to avoid costly long-term financing, in 2011 and 2012 mostly, thus the sudden increase of short-term debt against the plunge of long-term debt (35% drop from 2010 to 2012).

5. Forecasts

5.1. Pulp and Paper Index Prices Forecasts

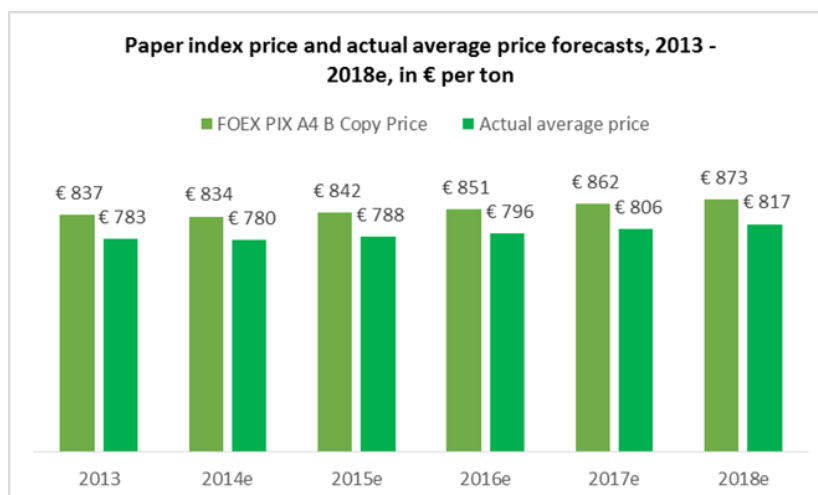
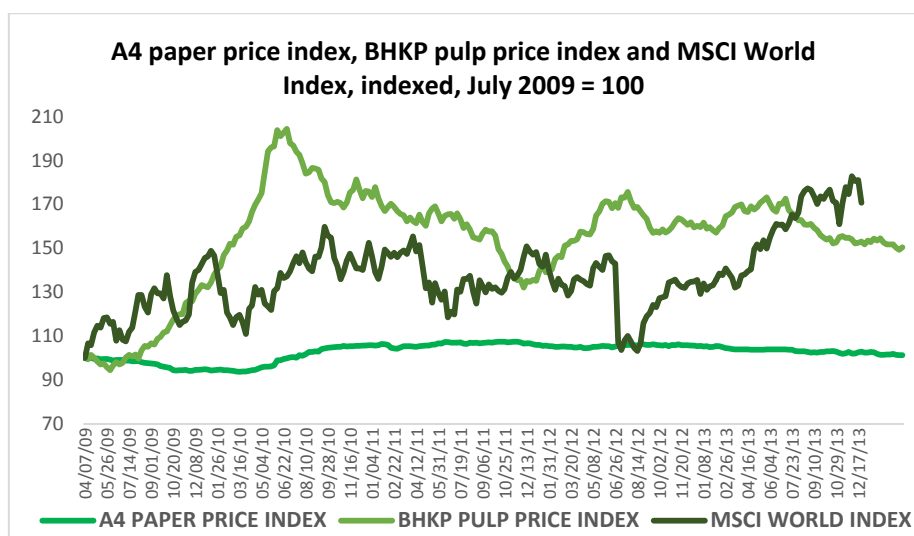


FIGURE 33: PAPER, PULP AND MSCI WORLD INDEX. SOURCE: BLOOMBERG

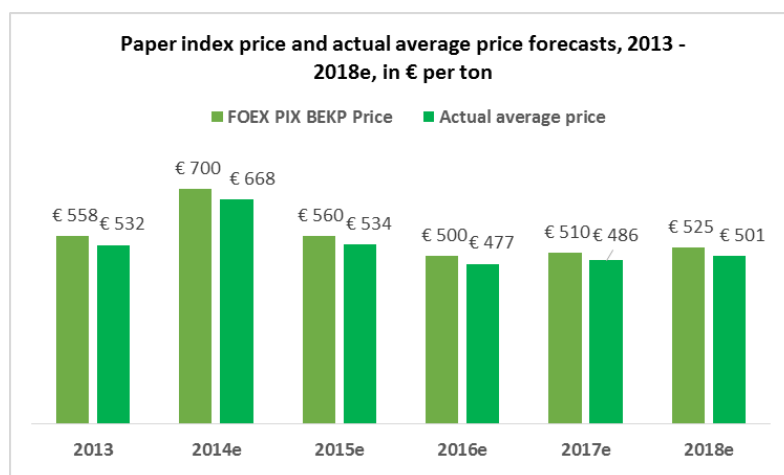
Printing & Writing paper prices tend to be very stable over time (see graph XX). From 2009 to 2014, on an indexed basis (price on the 4th of July 2014 = 100), the FOEX PIX A4 B Copy price index was persistently stable ranging from 94 to 108, or from €766 to €879 per ton. This

compares with a MSCI EQUITY INDEX ranging from 100 to 183, over the same period. In light of this fact, it is expected that P&W paper prices will remain quite stable for the foreseeable future.

Analysts' consensus is on a stable outlook for paper prices as well. Espirito Santo Investment Bank foresees paper prices decreasing by half percentage point in 2014 and increasing 1% from 2015 onwards. This is based on historical prices as well as information regarding a slowly increasing supply, with new paper mills replacing existing ones which will be divested, and slowly increasing demand globally.

For all of the abovementioned reasons, paper prices are here forecasted as the price of the previous year plus 70% the long term inflation forecasts for the European Union, after 2016 the market where the bulk of its paper sales are generated (78% in 2012). This implies that paper prices grow at a rate of 1.3% a year, the long term inflation forecast published by the European Central Bank. As a benchmark, the FOEX PIX A4 B Copy index had a CAGR of 1.5% between April 2010 and April 2014.

Pulp



Contrarily to paper prices, where analysts are somewhat in agreement over the price trends, in the pulp industry forecasts vary widely.

Pulp industry research firms highlight the main drivers of pulp prices over the next 2 to 3 years:

- The large injection of new market pulp capacity due before the end of 2014 (e.g. Suzano's Maranhão unit, fully operational in 2014, will add 1,500 thousand tons of pulp annually)

- Old pulp capacity being retired by means of companies divesting and shutting down inefficient mills
- China pulp imports growth
- Demand growth in the largest pulp consuming markets such as the US, Europe and key Asian economies
- World macroeconomic data, specifically employment rate, industrial output, consumption data, and so forth
- EUR/USD exchange rate

Although most analysts agree that the above mentioned data will drive pulp prices in the foreseeable future, the net result of these variables lacks consensus, with forecasts ranging from a significant price hike in the next 2 years to a sharp downfall of prices over the same period.

Without a consensus, one can choose the forecast to use by comparing past performance of the forecasts available. This is likely to yield a better forecast than an alternative method such as averaging the available forecasts to come up with a “consensus” forecast. Bright Market Insight was able to accurately forecast price directions 86% of the times – which is a great hit rate given historical pulp price volatility.

BMI forecasts the FOEX BHKP pulp index reaching €700 in the short-term and staying high through 2014. By March 2015, the company sees the index gradually decreasing to a minimum of €500 at which point it would stabilize throughout 2016 and 2017. This forecasted fall in prices has to do primarily with the planned capacity to be added over 2014, which will increase the quantity of pulp entering the market in the beginning of 2015, probably not immediately absorbed by the market, causing more aggressive pricing by the industry’s players.

The economic performance of emerging economies, especially that of China, is widely agreed to be one of the drivers of pulp prices in the foreseeable future. Indeed, much of the growth in pulp consumption is expected to come from emerging economies which are increasing its paper consumption and, without availability of eucalyptus forestlands to expand pulp production, therefore its pulp imports. Companies which have new pulp mills under development are counting on distributing the output from their new units to emerging markets where pulp demand is forecasted to grow at around 3% annually. In light of these, emerging markets paper products consumption historical upward growth trend must continue

through the next years or the industry will face excess capacity and the price cuts which follow such imbalances. This analysis focuses on emerging markets because the assumption that European and North American markets will, at best, remain stagnant. By looking at the recent historical data as well as the available forecasts, the assumption seems to be resilient.

5.2. Portucel - Forecasts

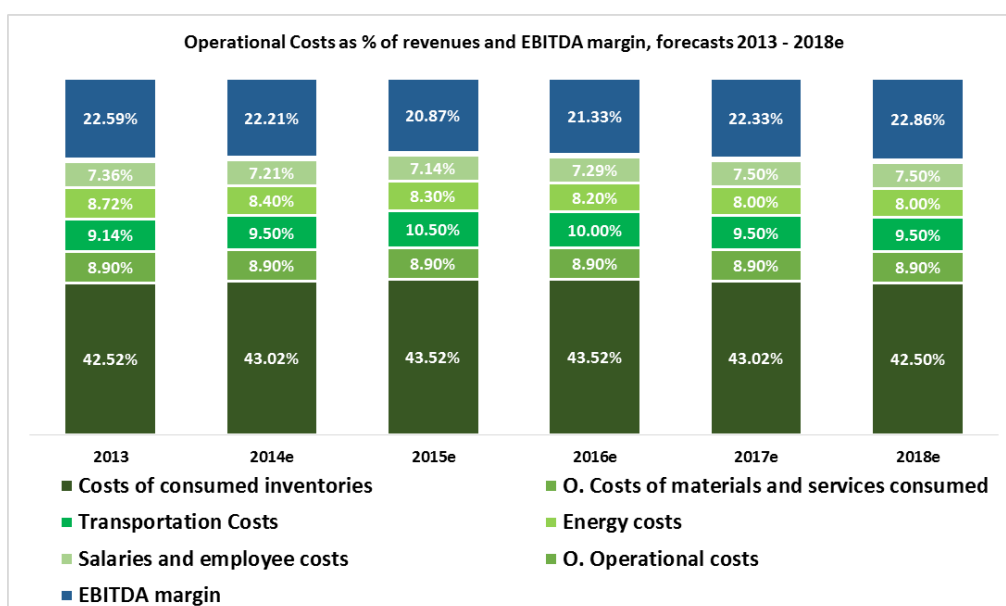
5.2.1. Energy revenues

Integrated energy mills have been a priority investment for Portucel, which developed and now operates biomass cogeneration mills integrated in their pulp and paper mills. Among the drivers of their strategic move into internally produced, renewable energy from biomass, one can highlight the following:

- The availability of the traditional energy sources at relatively stable prices is uncertain. As the paper industry is highly energy intensive, this risk is exacerbated. To hedge against energy price fluctuations and lower its weight on production costs, firms are channelling CAPEX to these assets to accomplish a higher degree of energy self-sufficiency
- Renewable energy sources, including biomass energy, the type most industry players generate, are subsidized by the Portuguese government, seeking to both reduce the country's carbon footprint and energy imports. This leads to a lower investment required from corporations, as a part of capital expenditures are financed by government funds while the government also subsidizes renewable energy by setting a fixed, above market price for the energy generated
- The company has access to forestry sub products used in biomass mills, which have a negligible market value. In fact, the firm can expand its energy segment organically as it would be relatively easy to source additional quantities of forestry sub product from their own forest lands

Revenues from the energy segment will be rising due to CAPEX being channelled to biomass production facilities integrated in the existing pulp and paper mills. Despite output increases, uncertainty remains with respect to the price at which Portucel can sell its energy generated. Currently, renewable energy generation is less subsidized than it was in the recent past and it is unknown whether subsidies will continue and at what terms. Despite this risk, revenues from this segment are here forecasted to grow at a rate of 3% annually, similar to the CAGR in the 2009 to 2013 period.

5.2.2. Operational Costs



Costs of consumed inventories

These costs are expected to rise in the near term, from the current 42.5% of sales to 43% in 2014 and 43.5% in 2015 and 2016. That year is forecasted to be the end of the upwards trend which started in 2010. Thus, 2017 costs of consumed inventories will revert back to 43% of sales values decreasing further to 42.5% in 2018, at which point are forecasted to remain unchanged, as a percentage of revenues. These forecasted increases over the next two years and subsequent decreases are explained by two key components of costs:

- Portucel's wood internal supply only accounts for 20% of total requirements. Furthermore, the domestic market cannot meet the balance nor will it meet in the future (there are regulatory constraints to eucalyptus plantation). So, the firm must procure this raw material internationally, mainly importing eucalyptus wood from Latin America, at uncertain and expensive prices. This structural issue is forecasted to continue to be costly throughout the future
- Chemicals used in the paper and pulp production are also rising steadily and are expected to be rising in the foreseeable future

In 2017, the trend will be reverted as the firm is able to secure a larger proportion of wood domestically and chemical prices enter a downward trend.

Costs of materials and services consumed

Costs of material and services consumed can be decomposed by transportation costs, energy costs as well as a wide range of other consumed services and materials, the latter forecasted in an aggregated account as information is scarce and simplification does not compromise the analysis and forecasts of costs of materials and services consumed. Overall, this costs are forecasted to remain stable throughout the five year estimation period, as a percentage of revenues. However, it is important to point out that transportation and energy costs were estimated separately from other costs, as this two have a weight of two thirds of the total costs of materials and services consumed.

Regarding energy costs, it is of note that the firm generates more revenues from biomass that it spends on its total energy costs. This is forecasted to be maintained as energy costs are forecasted to gradually decrease, as percentage of revenues, due to investments in improving the energy efficiency of their mills and their operations in general. Oil&Gas prices are here assumed to remain stable at 2013 levels.

The firm forecasts transportation costs rises going forward from around 9% of revenues to 10.5% of revenues as the firm sources wood from Latin America and diversifies its client base to geographic regions farther than Europe, where currently 95% of its sales are generated, as a percentage of revenues, as it imports raw materials from Latin America and exports to fast growing emerging markets in Asia and elsewhere.

Salaries and employee costs

Salaries and employee costs have been decreasing since 2009, as a percentage of revenue, and it is expected that this trend will continue at least until 2016. This is a consequence of the economic crisis that led Portugal's unemployment levels to its all-time high and salaries to decrease both in real and nominal terms. Another driver of this trend is the subsidized employment that Portucel has adhered to – put simply, the firm has to pay a fraction of the worker's salary. This is likely to continue until the economic hardship Portugal is facing is replaced with GDP growth and lower unemployment. While the matter is controversial, it is forecasted that 2015 will be a turning year, where salaries are again up and government subsidies are halted, thus increasing these type of costs, both in value and as a percentage of revenues.

5.2.3. CAPEX

Portucel has finished its largest investment in fixed assets in 2009 when the new Setubal paper mill development was concluded. The firm went on to put its capital expenditures to an almost complete halt after that round of investment, similarly to what other firms in the industry usually do after a period of aggressive investment. Furthermore, the company's assets are in the early stages of its useful life, thus capital expenditures required to update facilities and bring efficiency up to current benchmarks are minimal. Furthermore, firm managers and analysts alike agree that the firm has no organic growth opportunities, thus their growth model based on developing new mills cannot be replicated into the future.

Forecasting CAPEX is thus based on understanding future developments which Portucel is expected to undertake, given that capital investments to improve assets in place will be residual. This has to do with the lack of raw material available domestically and the Mozambique development plan is in its inception stage and won't require fixed asset investment in the foreseeable future.

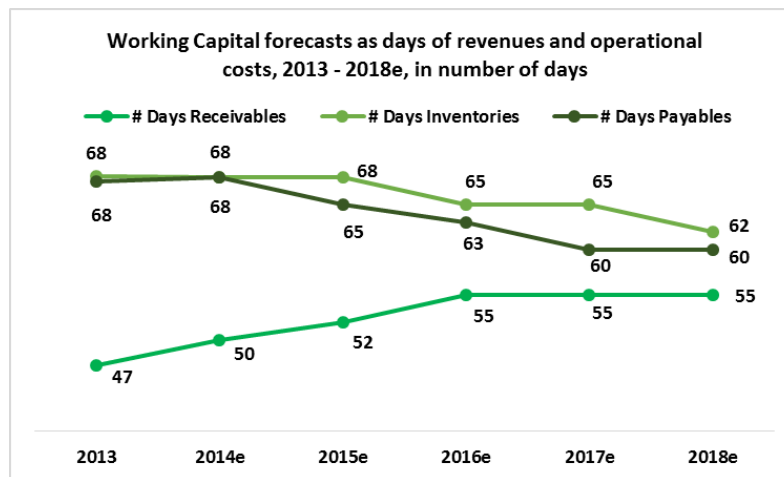
From the above, this thesis assumption regarding CAPEX needs is that they will be close to €40 million in 2014 and €54 million in 2015, half the value of depreciations. From 2015 on, capital expenditures are forecasted to catch up with depreciations by 2018, reflecting higher costs updating assets in place and investments in energy fixed assets.

Espirito Santo Investment Bank also expects capital expenditures to be residual over the next five years. In their Portucel valuation assumptions, ESIB sees CAPEX at €50 million a year from 2014 to 2016, half the figure for depreciations.

5.2.4. Depreciations

Depreciations for 2013 were around 3% of the book value of tangible assets excluding land. As assets in place won't change, this ratio is adopted for the five year estimation period and also in perpetuity. With CAPEX lagging depreciation over the period, net property, plant and equipment shrinks by around 2.8% per year, on average.

5.2.5. Working Capital



Working capital was estimated through average payment, receivables and inventory days. The average number of day's receivables is given by the ratio between sales and accounts receivables. This ratio is forecasted to increase by 8 days throughout the period, which means that it is assumed that customers pay their invoices, on average, within 2 months, closer to the length it takes Portucel to pay its suppliers currently. The increasing trend is thus likely to end by 2018, when the firm moves closer to 2 months. Conversely, the average number of days Portucel takes to pay its suppliers is likely to follow an opposite trend, reaching 60 days by 2018, from 68 days in 2013. Finally, day's inventories are likely to decrease as the firm is increasingly efficient in managing the output of the new mill and processes become more standardized and, as a consequence, inventories are kept for shorter periods of time.

Overall, working capital will remain fairly stable throughout the period, thus the investment will be relatively small compared with revenues, at around 1%. This is in agreement with the firm's own estimations that their working capital needs will be residual in the foreseeable future.

5.2.6. Debt

In late 2013, in the aftermath of the extremely tight credit conditions the Portuguese public sector and corporations alike faced, the Portuguese corporate bond markets eased up and firms once again had access to long-term financing at reasonable cost. Portucel issued long-term debt and retired two thirds of its short-term debt over the year. Assuming that access to credit will remain stable over the next 5 years, in this thesis it is forecasted that the company will keep its debt levels stable throughout the period both in absolute terms and as a percentage of revenues (revenues will remain stable and, consequently, so will interest-bearing liabilities). Thus, debt will stand at around €850 million throughout the period, or 54%

revenues. In terms of maturities, it is forecasted that the firm will adopt the average ratio of 2012 and 2013 through the future (18% of total debt) from 2015 onwards, reflecting their goal of financing structural projects with long-term debt and using short-term debt conservatively.

Average cost of debt is forecasted to gradually increase from the current 3% by 0.5% a year since 2015 to 2018, assuming that interest rates will rise in the European Union and elsewhere.

5.2.7. Dividends

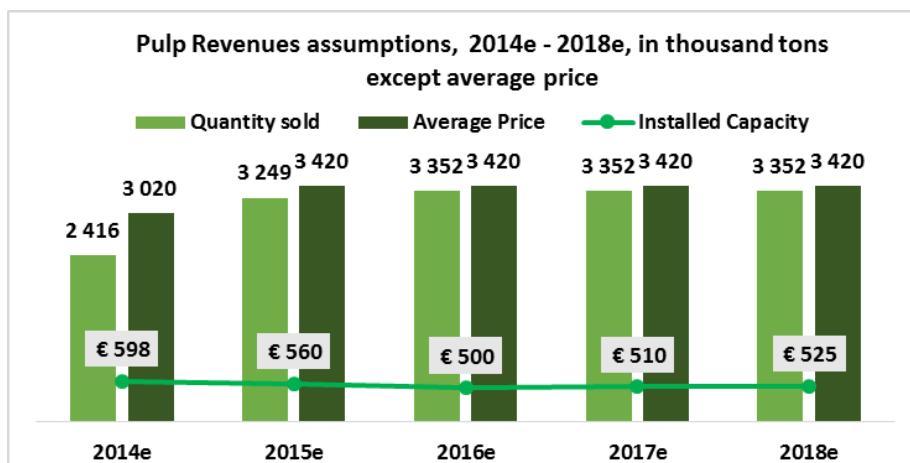
The firm has been accumulating cash since its new paper mill is operating. In 2011, the firm had €134 million in cash in its balance sheet which compares with €524 million in 2013, thus multiplying by four its cash reserves in just two years. This has led net debt to be increasingly lower, as interest-bearing liabilities increased by only around €50 million in the period. With stable free cash flows which cannot be invested in expanding the business, at least not domestically as the firm used to in the past, the firm has started buying back shares – treasury shares went from €42 million in 2011 to €94 million in 2013 – and distributing nearly all its earnings in the form of dividends – the dividend pay-out ratio was 96% in 2013.

In this thesis, it is assumed that the strategic goal of the company won't be to expand overseas, whether through M&A or organically. As such, the firm won't invest its earnings expanding its business neither it will need to bring down debt levels or invest substantial amounts in working capital or replacing assets in place. That will lead Portucel to generate substantial free cash flows which are forecasted to be completely distributed to shareholders, in the form of dividends. Furthermore, it is assumed that dividends will be higher than earnings from 2014 to 2017, as the firm distributes some of its cash accumulated over the last three years to investors. Dividends are assumed to be 150% of net income in 2014 through to 2016, or €230 and €210 million, 125% in 2017 and 100% in 2018.

5.3. Suzano - Forecasts

5.3.1. Revenues

Pulp

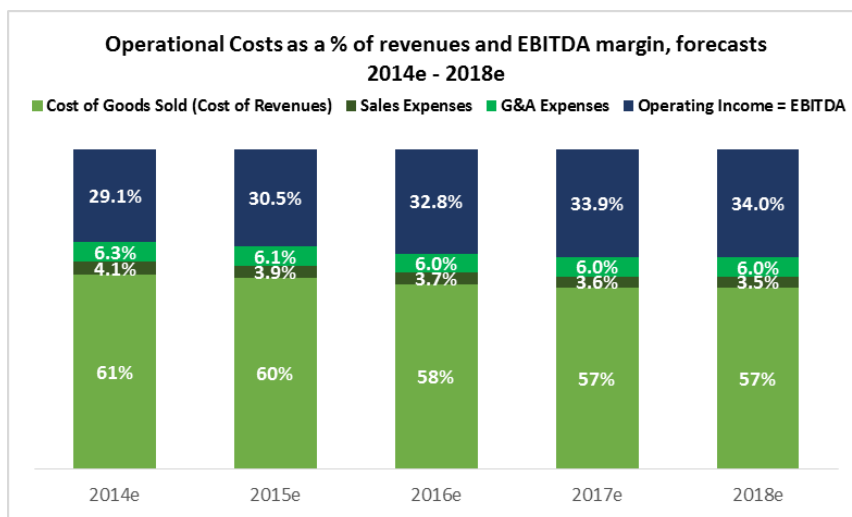


In 2014, pulp capacity will increase by 1,100 thousand tons, followed by another 400 thousand tons in 2015, as the result of the new plant starting operations. As firms set up production in new units, it is usual that the new units operate at a lower utilization rate in the first year. In this case, it is forecasted that the new mill will operate at half its capacity in 2014, meaning the total utilization rate will be 80%. After 2014, the firm will move to operate at full capacity (production equal to 98% of installed capacity), which is assumed to be sustained throughout the estimation period. The average discount over the index price is maintained in the foreseeable future, at 14.5%. All in all, pulp revenues will grow 11.8% a year from 2014 to 2018.

Paper

Paper revenues are forecasted to be flat throughout the five year estimation period, with full operating capacity to be maintained and the discount price over the index to remain at 0.7%. As such, the CAGR for the 2013 to 2018 will be 0.3%.

5.3.2. Costs



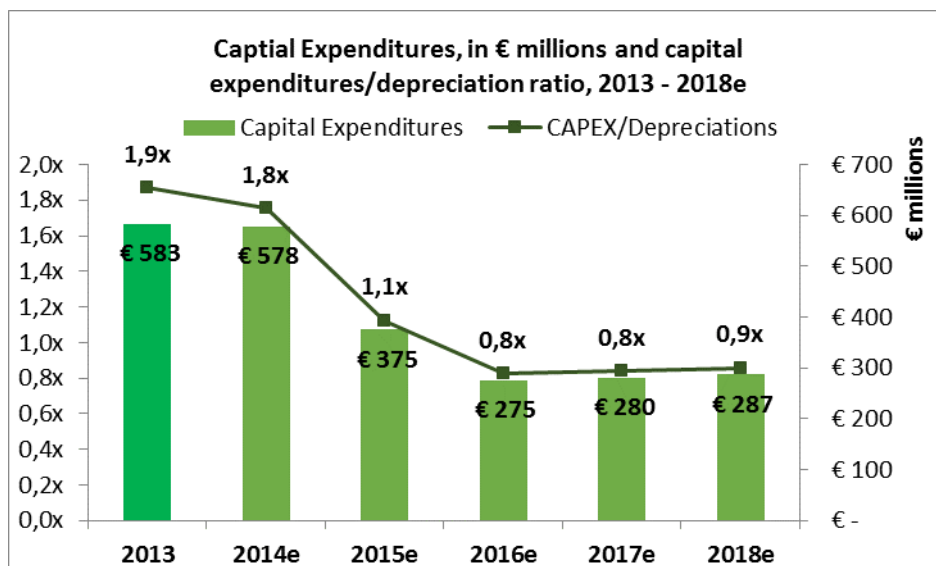
Costs of goods Sold

As the firm's pulp operations will operate at 80% of total capacity in 2014, as opposed to the current scenario in which the ratio reaches 99%, the increase in fixed costs arising from the new mill will have a larger weight in COGS, which will rise as a percentage of revenues. While COGS stood at 58% of revenues in 2013, they are forecasted to be 61% in 2014, thus lowering the gross profit margin by 3% p.p., to 39%. After 2014, COGS will initiate a downwards trend, to 60% in 2015, 58% in 2016 and finally 57% in 2017 and 2018, as a percentage of revenues.

Sales, general and administrative expenses

Sales and general and administrative expenses (G&A expenses) are forecasted to gradually decrease over the next five years, as a percentage of revenues. This assumption is supported by management's efforts to rationalize costs in these two areas, namely through the cost cutting program already in place. It is also foreseeable that the weight of these costs in total costs goes down as the firm grows and fixed costs are diluted. Specifically, sales expenses can be diluted as the firm achieves a larger scale in quantities sold while general and administrative expenses' weight can be reduced as the firm is able to manage the new industrial unit with some of its existing resources.

5.3.3. Capital Expenditures (CAPEX)



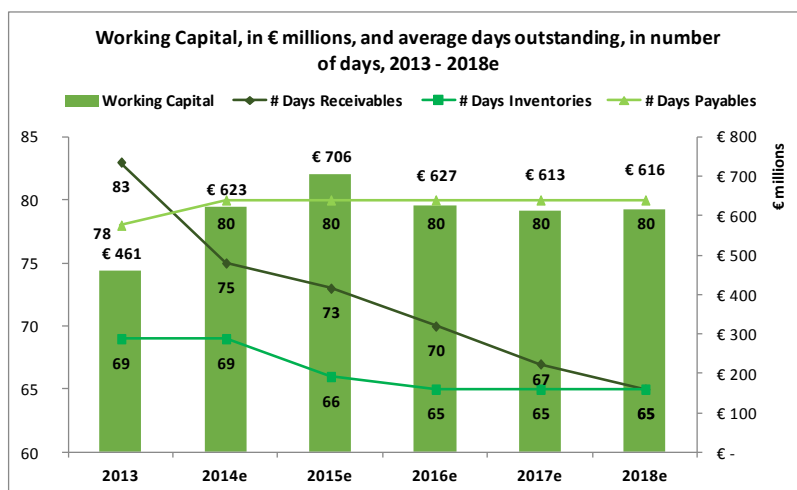
CAPEX is forecasted based on recent historical trend and analyst consensus provided by Bloomberg. Analyst consensus is available for 2014 and 2015 and these forecasts are used in this thesis. The numbers seem plausible: in 2014 CAPEX of €578 million will be directed towards ongoing investments in logistics, i.e. setting up the logistics to distribute the output of the new mill globally, energy and replacing and updating assets in place; in 2015, and onwards, the firm won't be taking any new large development projects thus CAPEX will decrease to levels close to depreciations, being composed largely by updating existing assets and expanding integrated energy mills.

5.3.4. Depreciations

The firm uses the straight line depreciation method for its fixed assets excluding biological assets, which are not subject to depreciation.

The assumption regarding depreciations is that the average useful life of fixed assets in place excluding biological assets will be maintained at 20 years, thus annual depreciations will equal approximately 5% of the book value of fixed assets throughout the period. Consequently, depreciations will amount to €329 million in 2014, and remaining stable throughout the estimation period.

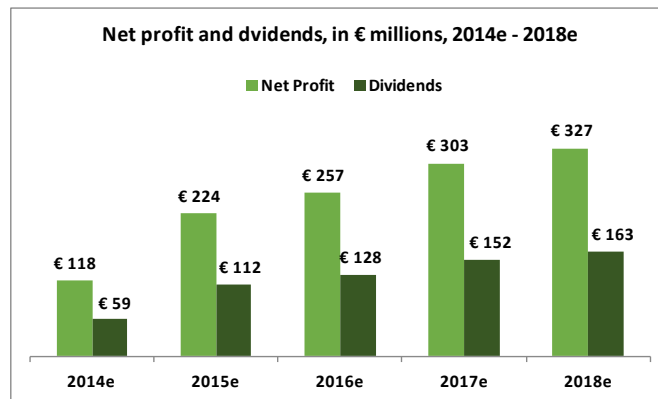
5.3.5. Working Capital



Investment in working capital will total €161 million in 2014 and another €83 million in 2015, as the firm's revenues increase by 26% and 155, in 2014 and 2015, respectively, accompanied by a cost increase roughly the same magnitude. However, the increase in working capital is countered by an improvement in the working capital average days outstanding. Specifically, the average number of days of outstanding receivables is forecasted decrease, from 83 days in 2013 to 75 in 2014 and to 73 in 2015. Indeed, the firm states in its annual report that it seeks to receive faster from clients to lower working capital investment needs. Suzano is also implementing measures to manage inventories more efficiently – the gains from these measures are forecasted to accrue during the estimation period, lowering the average number of days inventories are kept by 4 days throughout the period, from 69 days in 2013 to 65 days in 2018. Lastly, the number of days payables take to be liquidated is forecasted to remain stable at 80 days, similar to the 2013 figure.

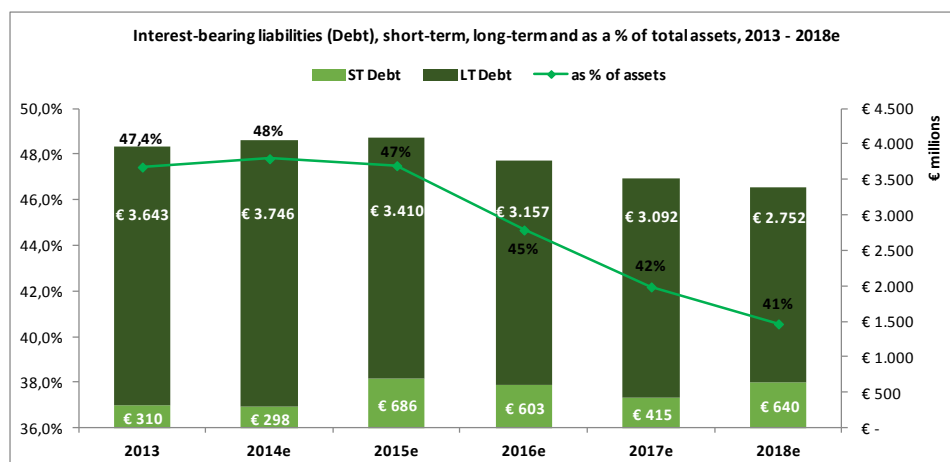
Incorporating the assumptions regarding receivables, payments and inventory average days into the working capital calculations yields the working capital investment needs throughout the estimation period. After a period of positive needs, from 2014 to 2015, during which the firm must allocate an extra €244 million to working capital, in 2016 and 2017 working capital needs will be negative at €78 million and €14 million, respectively, meaning that the firm will be able to reduce the cash allocated to working capital. After 2017, variations are forecasted to be residual.

5.3.6. Dividends



Suzano has outlined a strategy focused on using free cash flows to reduce its leverage, which management and analysts alike agree to be unsustainable given the volatility of the firm's revenues and costs. As a consequence, excess cash will be distributed primarily to its creditors rather than to its debtors, i.e. shareholders. Despite the focus on deleveraging, mature firms such as Suzano do not usually forgo its dividend distribution altogether – the firm had negative net income in 2013 and it still paid dividends of €0.03 per share. In light of this fact, it is forecasted that the firm will adopt a dividend pay-out ratio of 50% of net income during the estimation period as well as in perpetuity. This will amount to €0.055 a share in 2014, rising as net income increases, reaching €0.15 a share in 2018.

5.3.7. Debt and interest



Name	Debt to EBITDA	Debt to Assets	EBITDA to Interest
SUZANO PAPEL E CELULOSE	6,9x	47%	2,2x
KLABIN SA	5,2x	47%	3,8x
EMPRESAS CMPC SA	4,7x	28%	4,8x
LEE & MAN PAPER MANUFACT.	3,8x	35%	9,8x
PORTUCEL SA	2,5x	29%	13,4x
GUANGDONG GUANHAO HIGH-TEC	9,0x	37%	3,1x
UPM-KYMMENE OYJ	4,0x	28%	7,0x
KAPSTONE PAPER AND PACKAGING	3,8x	45%	12,5x
SCHWEITZER-MAUDUIT INTL INC	2,4x	31%	55,9x
METSA BOARD OYJ	3,9x	33%	2,8x
Average	4,6x	36%	11,5x

The Maranhao project was the largest project to ever be undertaken by Suzano and also one of the largest projects to be developed in the pulp and paper industry lately. The bulk of the investment occurred between 2010 and 2013, which led the firm to increase its debt by over €1.5 billion, or 10 p.p. as a proportion of total assets.

The capital expenditures needs put leverage ratios above the industry average – whether one looks at Debt to EBITDA, Debt to total Assets or EBITDA to interest, the firm seems overleveraged if compared with a group of industry peers. Taking ratio of debt to total assets into consideration, Suzano has the largest proportion of interest-bearing liabilities, 11 p.p. above the peer group average. The interest coverage ratio, given by EBITDA divided by interest, also leads to the conclusion that Suzano is more leveraged than the industry average. While the firm's EBITDA is slightly above double the amount of interest it pays, the industry's average is EBITDA 11 times the value of interest.

Management is concerned with the highly leveraged capital structure the firm has adopted over the last years. Believing that the current capital structure threatens the sustainability of the firm and leaves it exposed to financial distress, reducing leverage is the top priority of the firm over the next years. It is assumed that the goal of the firm is to bring debt down, closer to the peer group average of 36% of total assets, from the current 47%. That will occur from 2015 onwards, where it is forecasted that cash-flows to service debt will be enough to lower debt to 41% of total assets by 2018. In absolute terms, it is assumed that the firm will maintain a cash balance close to €1 billion, as it did historically. Over that balance, all cash after investments and dividend distributions will be used to bring down debt levels, meaning that, from 2014 to 2018, the firm lowers debt by €561 million, from the 2013 level of €3.9 billion to €3.4 billion.

6. Rationale for the proposed transaction

The proposed merger, between Portucel and Suzano Papel e Celulose, has the potential to enhance the competitive strengths of both companies while minimizing their weaknesses. The

main propositions which constitute the strategic fit of this deal are highlighted below. These are based on the strategic assessment that both companies would benefit from selling its products in each other markets and that cooperation in different areas of their value chains can reduce costs and secure their competitive advantages.

Gain access to new markets

Suzano Papel and Celulose has a strong, consolidated presence in South America, especially in Brazil, and a rising presence in Asia, the world's regions where printing and writing paper demand growth is currently higher and is forecasted to be higher in the next five years, when compared to the rest of the world. Furthermore, while economies in these regions expand and living standards rise, the demand for premium products is expected to rise. Portucel, having some of the world's most valued premium brands, has the potential to capitalize on this trend and reap profits from selling its distinctive paper brands in markets such as China and Brazil, among others. The already established distribution channels of the Brazilian company in these regions will facilitate the entry and expansion of Portucel's paper products. Besides, the Portuguese company products can complement the product portfolio of Suzano, thus reaping synergies from cross-selling initiatives.

On the other hand, Suzano can benefit from access to the consolidated European pulp and paper market through cooperation with Portucel. The Portuguese company has a long track record and a solid position in the European market but lacks size and output to capture a higher market share. Suzano can use Portucel's expertise and market access to increase their combined market share in Europe.

CAGR demand		
	2009 - 2013	2014e - 2019e
North America	-3.8%	-2.8%
Western Europe	-3.0%	-2.3%
Eastern Europe	3.1%	2.0%
Asia	3.3%	2.2%
Latin America	2.3%	1.1%
Others	2.2%	1.7%

Portucel can secure stability in the value chain

Suzano 2024 Plan highlights their vision and competitive advantages which management believes will make the company one of the largest and most efficient forestry based companies

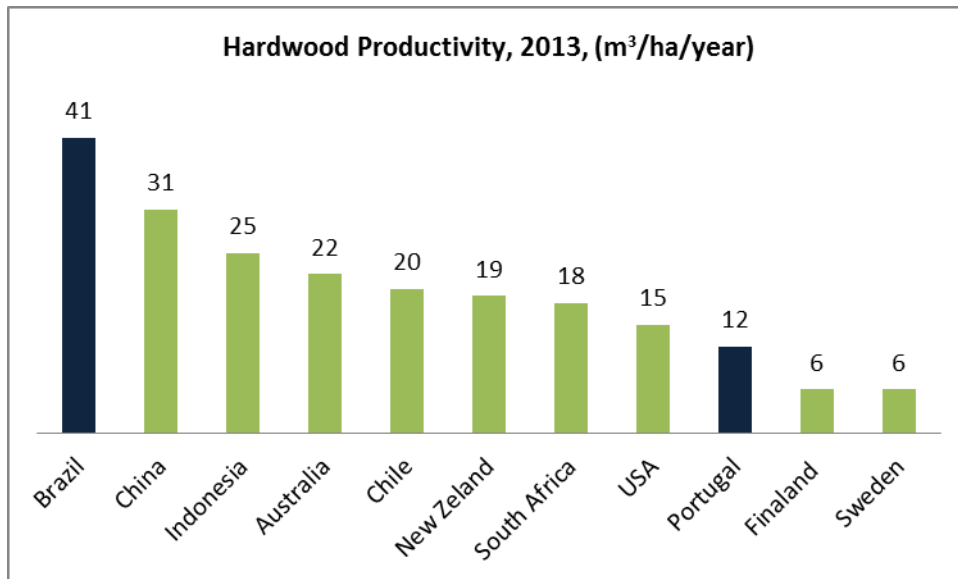
in the world. Accordingly to the Plan, its core strategic focus will be on expanding installed capacity of market pulp – as well as keeping a strong position in the paper segment and invest in in-house renewable energy production.

Contrary to Suzano, which has a massive forest base to expand organically through greenfield investments, Portucel has very limited access to eucalyptus wood to expand its pulp plants. It would thus be strategically sound for both companies to combine the highly productive eucalyptus forests of Suzano and the capability of Portucel to transform eucalyptus wood into paper products efficiently which are sold at premium pricing. To accomplish this, the two companies operations could be merged to accommodate their strengths – Portucel would secure a stable, reliable and relatively inexpensive raw material supply while Suzano would secure a distribution channel for its production.

By integrating their business the combined entity would benefit from less exposure to highly volatile pulp prices. In fact, Suzano's revenues are highly exposed to price movements of this typically volatile commodity. Conversely, Portucel cannot expand its paper production without becoming exposed to pulp prices – which is in fact the main reason why it chooses not to expand its paper plants.

Joint development of industrial facilities in Brazil

Brazil's eucalyptus forests yield 41 m³ of hardwood per hectare per year, being the world's most productive forests due to excellent soil and climate conditions which provide substantially shorter harvesting cycles than most other countries and thus more wood per hectare. Contrastingly, Portugal has much less productive eucalyptus forests: on average, on hectare of planted land yields 12 m³ of wood per year. (See figure XX)



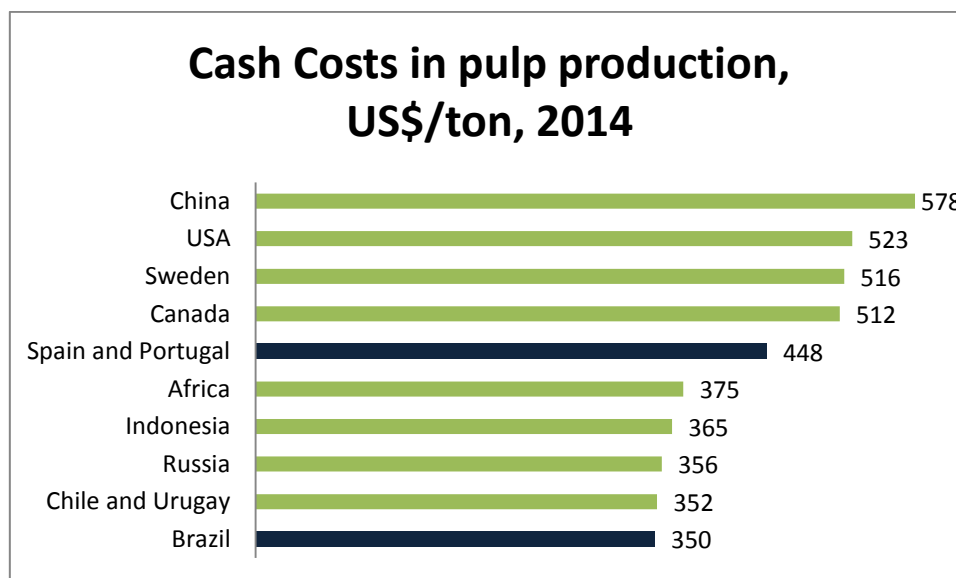
Having the most productive forests on earth, Brazilian forest based companies, like Suzano Papel e Celulose, reap the benefits from this competitive advantage and are thus able to produce cheaper pulp than most other countries, namely Portugal. Currently, it costs \$350 to produce one ton of pulp in Brazil while it costs \$448 to produce the same amount of pulp in Portugal (and Spain). China and the US, the world's two largest paper consumers, need \$578 and \$523 to produce one ton of pulp, respectively. It is thus clear that Brazil has a comparative advantage not only to Portugal but also to most European, North American and Asian countries, where a large portion of the world's pulp demand is concentrated.

In light of these facts and adding to it the strategic goal of Portucel to expand its industrial facilities, the company could partner with Suzano to develop integrated pulp and paper mills near the latter's massive forestlands, in line with the integrated business model that Portucel states as its core competitive advantage.

For Suzano Papel e Celulose, developing integrated production facilities with its Portuguese peer would not only provide the necessary financing for a typically large and long investment but would also allow the firm to access the expertise of Portucel in building the world's most efficient mills (one of Portucel's mills is to date the most efficient globally).

Last but perhaps most importantly, Portucel would be able to diversify their production base. According to the company's Chairman, the company must acknowledge that it is present in 118 countries while producing exclusively in one. Furthermore, he says that the American continent would be the obvious target to develop a new production unit. Indeed, the long-term in the paper industry is to move closer to customers so as to avoid rising transportation

costs. Moving to Brazil could not only mean lower transportation costs but also lower production costs.



Source: Hawkins Wright (April 2014)

Concentrated ownership

Portucel and Suzano are both controlled by a holding which owns more than 50% of outstanding shares. In order to engage in negotiations and ultimately agree on the terms of the merger, the two holdings can cooperate in a more efficient fashion than it would take in a company with only minor shareholders. In this context of an entity controlling each of the companies, a deal could be negotiated between the two parties as it is usual for them to control key decisions of their firms.

7. Standalone Valuation

7.1. Pro-forma financial statements

7.1.1. Portucel

Income Statement

Income Statement	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Revenues	€ 1,551,857	€ 1,584,021	€ 1,563,247	€ 1,567,513	€ 1,595,765	€ 1,626,097
Costs						
Consumed and sold inventories	€ 659,833	€ 681,429	€ 680,308	€ 682,165	€ 686,481	€ 691,091
Costs of materials and services consumed	€ 415,261	€ 424,446	€ 432,948	€ 424,725	€ 421,210	€ 429,216
Salaries and employee costs	€ 114,248	€ 114,283	€ 111,656	€ 114,200	€ 119,746	€ 122,023
Other operational costs	€ 12,015	€ 12,015	€ 12,015	€ 12,015	€ 12,015	€ 12,015
EBITDA	€ 350,500	€ 351,848	€ 326,318	€ 334,407	€ 356,312	€ 371,752
Depreciations, Amortizations and imparity losses	€ 102,821	€ 114,401	€ 113,323	€ 112,705	€ 112,569	€ 112,958
Provisions	€ 13,964	€ -	€ -	€ -	€ -	€ -
EBIT	€ 233,715	€ 237,446	€ 212,995	€ 221,703	€ 243,744	€ 258,794
Net Financial Results	€ 14,148	€ 13,597	€ 17,450	€ 21,729	€ 26,609	€ 31,695
Earnings before taxes	€ 219,567	€ 223,849	€ 195,545	€ 199,974	€ 217,135	€ 227,099
Taxes	€ 9,520	€ 69,841	€ 55,144	€ 50,393	€ 54,718	€ 57,229
tax rate		31%	28%	25%	25%	25%
After-Tax Earnings	€ 210,047	€ 154,008	€ 140,401	€ 149,580	€ 162,417	€ 169,870
Non-controlling interest	€ 5	€ -	€ -	€ -	€ -	€ -
Net Profit	€ 210,042	€ 154,008	€ 140,401	€ 149,580	€ 162,417	€ 169,870
Net Profit Margin	14%	10%	9%	10%	10%	10%
Earnings per share	€ 0.292	€ 0.214	€ 0.195	€ 0.208	€ 0.226	€ 0.236
Number of shares	718,877	718,877	718,877	718,877	718,877	718,877
Key Ratios	2013	2014e	2015e	2016e	2017e	2018e
EBITDA Margin	23%	22%	21%	21%	22%	23%
EBIT Margin	15%	15%	14%	14%	15%	16%
EBITDA/Net Interest	25x	26x	19x	15x	13x	12x
ROE	14%	11%	10%	11%	12%	13%
Dividend Payout Ratio	96%	135%	135%	125%	115%	100%
Dividends per share	0.28	0.29	0.26	0.26	0.26	0.24

The consolidated income statement of Portucel was decomposed for the years in the estimation period, between 2014 and 2018. Incorporating the assumptions discussed in the forecasts Margin section, the resulting pro-forma income statement shows that the firm will be profitable throughout the period, although net profit margin will decrease from 14% in 2013, to 10% thereof, consequence of the operational costs growing faster than revenues and the increase of the corporate tax rate, as the subsidized tax rate was due to Portucel's large investments in recent years. The subsidized rate is assumed to be extinct in 2014, and the firm will bear the current tax rate, which the government said to be lowering over 2015 and 2016. The earnings per common share will amount to €0.214 in 2014, as opposed to the 2013's value of €0.292. With the lack of available information, it is assumed that provisions will be null throughout the estimation period. The financial results will become more negative, as the firm distributes some of its cash – thus stops generate income – and the debt outstanding as well as the average interest rate increase. Despite the increase, an interest coverage ratio – which is the proportion of EBITDA to net financial results - will be twelve at its lowest in 2018, from the current value of EBITDA being twenty-five times the value of net financial results.

The pro-forma Balance Sheet and Cash-Flow statement were also composed for the years composing the estimation period (see appendix 1).

7.1.2. Suzano Papel e Celulose

Income Statement

Income Statement	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Revenues	€ 1,994,255	€ 2,512,650	€ 2,886,998	€ 2,754,769	€ 2,802,311	€ 2,867,800
Cost of Goods Sold	€ 1,157,210	€ 1,532,716	€ 1,732,199	€ 1,597,766	€ 1,597,318	€ 1,634,646
Gross Profit	€ 837,046	€ 979,933	€ 1,154,799	€ 1,157,003	€ 1,204,994	€ 1,233,154
Sales Expenses	€ 87,991	€ 103,019	€ 112,593	€ 101,926	€ 100,883	€ 100,373
G&A Expenses	€ 132,161	€ 158,297	€ 176,107	€ 165,286	€ 168,139	€ 172,068
Other Operating Expenses	€ 43,627	€ 50,253	€ 57,740	€ 55,095	€ 56,046	€ 57,356
Other Operating Revenue	€ 80,522	€ 62,816	€ 72,175	€ 68,869	€ 70,058	€ 71,695
EBITDA	€ 653,788	€ 731,181	€ 880,534	€ 903,564	€ 949,984	€ 975,052
Depreciation and Amortizatio	€ 311,785	€ 329,435	€ 334,102	€ 333,881	€ 333,892	€ 334,224
EBIT	€ 342,004	€ 401,746	€ 546,432	€ 569,684	€ 616,092	€ 640,828
interest	€ 238,933	€ 244,397	€ 247,556	€ 227,259	€ 211,996	€ 205,019
Net non-operating losses	€ 201,221	€ -	€ -	€ -	€ -	€ -
Earnings before taxes	-€ 98,150	€ 157,350	€ 298,877	€ 342,425	€ 404,096	€ 435,809
Taxes	-€ 20,864	€ 39,337	€ 74,719	€ 85,606	€ 101,024	€ 108,952
effective tax rate	21%	25%	25%	25%	25%	25%
After-Tax Earnings	-€ 77,286	€ 118,012	€ 224,157	€ 256,819	€ 303,072	€ 326,857
Net Profit	-€ 77,286	€ 118,012	€ 224,157	€ 256,819	€ 303,072	€ 326,857
Net Profit Margin	-4%	5%	8%	9%	11%	11%
Earnings per share	-€ 0.071	€ 0.109	€ 0.207	€ 0.237	€ 0.279	€ 0.301
Number of shares	1,084,900	1,084,900	1,084,900	1,084,900	1,084,900	1,084,900

Key Ratios	2013	2014e	2015e	2016e	2017e	2018e
EBITDA Margin	33%	29%	31%	33%	34%	34%
EBIT Margin	17%	16%	19%	21%	22%	22%
Net Debt/EBITDA	4x	4.3x	3.6x	3.2x	2.8x	2.6x
EBITDA/Interest	3x	3.0x	3.6x	4.0x	4.5x	4.8x
ROE	-2%	4%	6%	7%	8%	8%
Payout ratio	0%	50%	50%	50%	50%	50%
Dividends per share	0.03 €	0.054 €	0.103 €	0.118 €	0.140 €	0.151 €

Suzano's pro-forma consolidated income statements are the result of the assumptions discussed in the forecasts section. The firm presented losses for 2013, due primarily to interest payments and non-operating losses which are not recurrent. The EBIT was positive, with a margin of 17%, in 2013, which will decrease by 1 p.p. in 2014 and then increase gradually to 22% in 2017 and 2018. The bottom line will also increase, both in absolute terms and as a percentage of revenues, from 5% in 2014 to 11% in 2018, matching Portucel's net profit margins. This is a consequence of a larger EBITDA margin after 2016, a decrease of the weight of interest payments and also revenues growth. The effective tax rate is forecasted to match

Brazil's corporate tax rate of 25% (KMPG, 2013). Earnings per share will grow throughout the estimation period, reaching €0.31 in 2018, from €1.109 in 2014.

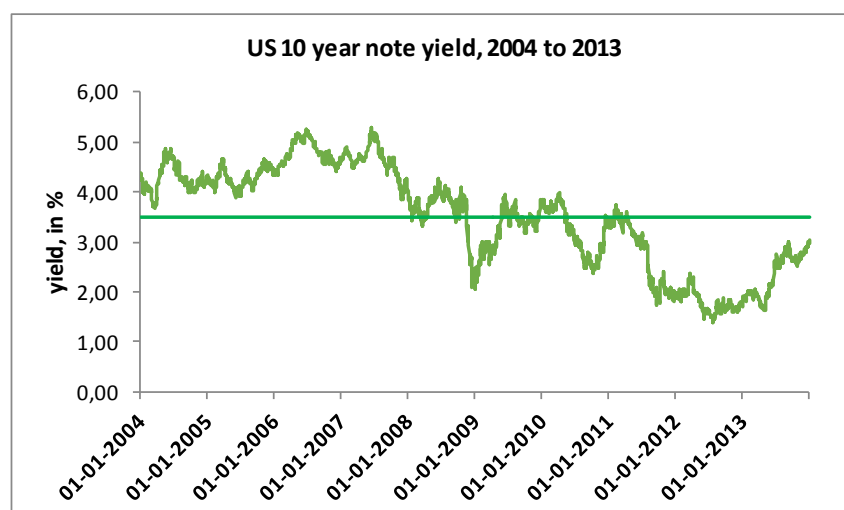
The interest coverage ratio, which is lower than the peer group average and a ratio which management seeks to increase, stood at EBITDA being three times the value of interest in 2013. This ratio will improve throughout the estimation period, peaking at 4.8 times in 2018.

The pro-forma Balance Sheet and Cash-Flow statement were also composed for the years composing the estimation period (see appendix 2).

7.2. Cost of capital

Risk free Rate

The risk free rate used in both companies cost of capital calculation is the yield of a ten year US government note. The reasons behind this choice have been discussed in the literature review. The average yield on these bonds was 2.34% in 2013, which compares with an average of 3.5% between 2004 and 2013. The choice falls on the latter: bond yields have been at their historical lowest since the financial crisis, as part of the economic stimulus packages adopted by governments and central banks around the world. As current yields are unlikely to be sustained throughout the future, the average yield to be used as an input will be the longer average.



Market Risk Premium

The market risk premium is different in Brazil and Portugal, according to a 2013 survey conducted by Fernandez, Aguirreamalloa and Linares (2013). The average market risk premium

used in this thesis will be the survey average result, which is 6.1% in Portugal, to be used for Portucel's cost of capital, and 6.5% in Brazil, to be used for Suzano's cost of capital estimation.

Beta

To calculate the beta to input into the cost of capital, the Hamada (1972) formula is used.

$$\beta_{levered} = \beta_{unlevered} \left[1 + (1 - tax) \frac{D}{E} \right]$$

The calculations are performed based on a peer group of paper industry firms, chosen taking into account its growth and market capitalization (calculations in appendix 4). Estimating the beta through linear regression was also performed, although the results are not significant and would skew results downwards artificially.

The market-capitalization weighted peer group unlevered beta is 0.6, which gives a levered beta, given an effective tax rate of 25% and a peer group Net Debt to Market Capitalization ratio of 37.4%, of 1.15.

Cost of capital – Levered cost of equity and WACC

Suzano Papel e Celulose cost of equity and WACC

SUZANO PAPEL E CELULOSE - Cost of Equity	
Risk Free Rate	3.5%
Equity Market Risk Premium	6.5%
Equity Beta (Relevered)	1.15
Average Debt/Capitalization (Market)	37.4%
Effective Marginal Tax Rate	25.0%
Adjusted Equity Market Risk Premium	7.5%
Levered Cost of Equity	11.0%
Cost of Debt	
Cost of Debt (Pretax)	6.0%
Cost of Debt (Aftertax)	4.5%
Nominal WACC	8.6%

The estimated levered cost of equity for Suzano is 11%, calculated using CAPM. Its after-tax cost of debt is assumed to be 4.5%, which is the year end 2013 average yield on the firm's debt

net of its effective tax rate of 25%. The nominal weighted average cost of capital results in 8.6%, based on the peer group's debt to market value of equity ratios.

Portucel cost of equity and WACC

PORTUCEL - Cost of Equity	
Risk Free Rate	3.5%
Equity Market Risk Premium	6.1%
Equity Beta (Relevered)	1.16
Average Debt/Capitalization (Market)	37.4%
Effective Marginal Tax Rate	25.0%
Adjusted Equity Market Risk Premium	7.1%
Levered Cost of Equity	10.6%

Cost of Debt	
Cost of Debt (Pretax)	3.8%
Cost of Debt (Aftertax)	2.9%

Nominal WACC	7.5%
---------------------	-------------

The cost of capital and weighted average cost of capital estimation results are shown. The cost of capital, calculated through CAPM, is 10.6% while the weighted average cost of capital, assuming a cost of debt after tax of 2.9% and an effective tax rate of 25%, is 7.54%.

7.3. Valuations Models

7.3.1. Portucel

7.3.1.1. Discounted Cash-Flows

	€ '000	2014e	2015e	2016e	2017e	2018e
NOPAT	€	163,363	152,931	165,834	182,320	193,578
Capex	€	39,601	54,714	70,538	87,767	105,696
Change in Working Capital		14,304	5,720	13,491	4,257	4,571
D&A	€	114,401	113,323	112,705	112,569	112,958
Unlevered FCF	€	223,860	205,820	194,509	202,865	196,269
	<i>Growth (%)</i>	-	-8.06%	-5.50%	4.30%	-3.25%
Terminal Value	€					3,016,527
Discounted FCFF	€	208,229	178,081	156,544	151,869	2,237,229

Enterprise Value	3,456,246
- Debt	831,335
Equity Value	2,624,911
# Shares	718,877
Value per share	3.65

The discounted cash-flow valuation starts with computing the value of EBIT after taxes, known as net operating profit less adjusted taxes (NOPLAT). Non-cash items, meaning depreciation and amortization, is then added back to NOPLAT, as well as two other items from the cash-flow statement, working capital variation and capital expenditures. Cash-flows from financing activities are not added as capital structure decisions are incorporated in the discount rate WACC. It is assumed that the firm's operations and its cash-flows will stabilize after 2018, at which point a terminal value was calculated. This leads to the unlevered free cash-flows to the firm and also the terminal value, obtained through the following formula:

$$Terminal\ Value = \frac{FCF}{WACC - r_{growth}}$$

The terminal growth rate is assumed to be 1%, in line with the inflation estimates for Portugal and the forecasted long-term growth rate of the industry.

Discounting these cash-flows at the WACC rate of 7.5% leads to an enterprise value of €3.456 billion, distributed by €2.931 billion from operations and €524.3 million in cash, assumed to be entirely excess cash. By subtracting debt outstanding, which amounted to €831.3 million in 2013, the equity value is €2.625 billion or €3.65 per common share. As a benchmark, Espirito Santo Investment Bank valued Portucel at €3.8 per share, or €2.731 billion, in a February 2014 equity research report. Portucel shares closed their trading day on the 31st December 2013 at €2.91, implying a market undervaluation of 20%. However, the Investment Bank valuation of €3.8 per share and a buy recommendation implies that analysts are confident in an appreciation of shares in the future.

7.3.1.2. Dividend Discount Model

	€ '000	2013	2014e	2015e	2016e	2017e	2018e
Earnings per share	€	0.29	0.21	0.20	0.21	0.23	0.24
Dividends per share	€	0.28	0.29	0.26	0.26	0.26	0.24
Terminal Value							2.46
Present value DPS	€		0.26	0.22	0.19	0.17	1.63

Value per share	3.21
# Shares	718,877
Equity Value	2,304,023

As the firm has a history of paying regular dividends, and it is assumed that it will continue paying dividends in the foreseeable future, the dividend discount model was used to assess

the value of the firm's equity. The choice fell for this method to better capture the effect on value of the firm paying dividends larger than earnings per share from 2014 to 2017, which was assumed to be the use for the firm's growing cash balances.

This model is applied by discounting dividends per share at the cost of levered equity and the terminal value growth rate is assumed to be equal than the used in the discounted cash-flows valuation, at 1%. This yields a result of €3.21 per share, decomposed by €2.48 from the present value of dividends per share and €0.73 from the cash balance, once again assumed to be entirely excess cash. This result is 12% lower than the value of obtained by the DCF valuation. As it was already mentioned, Portucel shares closed at €2.91 on December 31st, which in this case represents a 9% market undervaluation.

7.3.1.3. Sensitivity Analysis

Change in Revenues	-3%	-1%	0%	1%	3%
EV	3,336,294	3,416,262	3,456,246	3,496,230	3,576,197
Change in EV (%)	-3.47%	-1.16%	0.00%	1.16%	3.47%

Firms in the paper and pulp industry are price takers, although paper prices are subject to a certain degree of differentiation, thus average paper prices tend to be more resilient to index paper price changes. As a consequence, Portucel's revenues are exposed to the evolution of pulp and price indexes, making a sensitivity analysis relating revenues with Enterprise Value of paramount importance. Given the weight of fixed costs in the total cost structure of the company, a change in revenues leads to a higher change in free cash-flows to the firm, assuming everything else constant (*ceteris paribus* approach). As 1% change in annual revenues leads to a 1.16% change in EV. Although the change is higher in Suzano, which has a higher weight of fixed costs in its cost structure, it can be concluded that the assumptions regarding the evolution of paper and pulp prices and consequently of revenues are a material risk.

		Terminal Value Growth Rate				
		0.0%	0.5%	1.0%	1.5%	2.0%
WACC	6.5%	3,581,814	3,765,472	3,982,521	4,242,981	4,561,321
	7.0%	3,365,859	3,519,636	3,699,043	3,911,069	4,165,500
	7.5%	3,176,412	3,306,344	3,456,246	3,631,104	3,837,717
	8.0%	3,014,842	3,126,157	3,253,373	3,400,161	3,571,415
	8.5%	2,870,264	2,966,240	3,075,014	3,199,326	3,342,763

Assessing the impact of the cost of capital and terminal growth rate in the value of the firm must be included in any valuation, as these two variables vary depending on the assumptions taken and the methodology followed for its estimation. It is important to acknowledge that WACC and perpetuity growth rate also depend on macroeconomic and market inputs which change throughout time. Furthermore, they typically account for a great of value estimated and even a slight change translates into a great difference in EV. The analysis undertaken shows the base case scenario with WACC at 7.5% and perpetuity growth rate at 1% and 0.5% changes to both. A WACC of 6.5%, with everything else constant, yields an EV of €3.982 billion, or €526 million more than the base case; if WACC were to be half percent higher, the firm would be worth €202 million less. In terms of terminal growth rate, a figure of 2% instead of 1% would translate into an EV of €3.837 billion, €381 million more than the base case scenario.

7.3.2. Suzano Papel e Celulose

7.3.2.1. Discounted Cash-Flows

	€ '000	2014e	2015e	2016e	2017e	2018e
NOPAT	€	301,310	409,824	427,263	462,069	480,621
Capex	€	577,909	375,310	275,477	280,231	286,780
Change in Working Capital		161,958	82,711	- 78,728	- 13,993	3,014
D&A	€	329,435	334,102	333,881	333,892	334,224
Unlevered FCF	€	- 109,123	285,905	564,395	529,722	525,051
Terminal Value	€					6,906,547
Discounted FCFF	€	- 100,479	242,407	440,623	380,797	4,919,133

Enterprise Value	7,015,136
- Debt	3,953,011
Equity Value	3,062,125
# Shares	1,084,900
Value per share in €	2.82
Value per share in R\$	8.06

The discounted cash-flow valuation was also used to value Suzano. The methodology followed was the same used to value Portucel: Capital expenditures and working capital variations forecasted until 2018, year which it is assumed the firm's operations will stabilize, and deducted from NOPLAT. Depreciations and amortizations were added back, as these are the operational non-cash costs, needed to be excluded to arrive at the unlevered free cash-flows to the firm. The growth rate for the terminal value was set at 1%, which is the long-term forecast growth for the pulp and paper industry globally.

The resulting enterprise value is €7.015 billion, which is decomposed by €5.882 billion value from the firm's cash-flows discounted at the WACC rate of 8.6% and €1.132 billion corresponding to the cash balance in 2013, assumed to be entirely composed of excess cash. By subtracting interest-bearing liabilities of €3.953 billion, the firm's equity value is €3.062 billion, corresponding to €2.82 per share or R\$ 8.06, at the December 2013 euro real exchange rate. Suzano's shares closed at R\$ 9.24 in the last trading day of the year 2013, implying a market overvaluation of 15% in relation to the value estimated through the DCF valuation.

HSBC equity research issued an equity report in the beginning of 2014 which included a valuation of Suzano Papel e Celulose. The investment bank applied exactly the same beta considered in this thesis, a larger equity premium, at 8% and a terminal growth rate of 3%. The equity value per share calculated by the financial institution was R\$ 8.2, exactly the same value calculated in this thesis through APV and 2% higher than the value obtained through DCF.

7.3.2.2. APV

		2013	2014e	2015e	2016e	2017e	2018e
Unlevered FCF	€	-318,112	-109,123	285,905	564,395	529,722	525,051.12
Terminal Value	€						6,252,347
Discounted FCFF	€		- 99,749	238,895	431,081	369,842	4,325,364.75

Enterprise Value Unlevered	6,398,089
PV(ITS)	729,561
PV(Bankruptcy costs)	57,021
Enterprise Value Levered	7,070,629
- Debt	3,953,011
Equity Value	3,117,618
# Shares	1,084,900
Value per share in €	2.87
Value per share in R\$	8.21

As the firm will undertake a process of reducing leverage, from the current levels well above the industry to converge with the industry's debt to equity ratio, the APV method is chosen to value the firm. This choice is justified by the absence of a stable capital structure and to better assess the separation between the value created by Suzano's operations and by its leverage.

The unlevered cost of equity for Suzano is 9.4% and the cost of debt, before taxes, is 6%. Consequently, the firm's enterprise value unlevered is calculated with the same cash-flows used in the DCF valuation, but discounted at the unlevered cost of capital, yielding an

unlevered enterprise value of €6.398 billion. This is decomposed by €5.265 billion of value arising from the cash-flows and €1.1 billion cash balance.

		2013	2014e	2015e	2016e	2017e	2018e
interest	€	238,933	244,397	247,556	227,259	211,996	205,019
interest tax shields	€	59,733	61,099	61,889	56,815	52,999	51,255
PV(Interest tax shields)	€	59,733	57,641	55,081	47,703	41,980	38,301
TV(Interest tax shields)	€						654,200

The present value of the interest tax shields must be added to the firm's unlevered enterprise value. The tax rate used in computing the interest tax shields is 25% and the appropriate discount rate to use is the cost of debt, which is 6% (see literature review – APV). The terminal value of interest tax shields was calculated by subtracting the unlevered terminal value to the levered terminal value (reference needed). Having all the inputs necessary, the present value of interest tax shields is equal to €730 million. This represents around 15% of the value of the firm unlevered, which seems plausible given the large debt outstanding in 2013 and which only starts a downwards trend from 2016.

The bankruptcy costs in case the firm is liquidated are estimated to be 20% (see literature review – Bankruptcy costs). Furthermore, the probability of default, estimated through Suzano's BB credit rating, is 4% Damodaran (2006). This yields costs of financial distress of €57 million.

The levered enterprise value is calculated by adding the present value of tax shields and subtracting the costs of financial distress to the unlevered enterprise value. The value calculated was €7 billion, which is similar to the value achieved in the DCF valuation (2% more). By subtracting the value of debt outstanding in the end of 201, the equity value is equal to €3.117 billion, or €2.87 per share, or R\$ 8.21.

7.3.2.3. Sensitivity analysis

Change in Revenues	-3%	-1%	0%	1%	3%
EV	6,673,042	6,901,105	7,015,136	7,129,167	7,357,230
Change in EV (%)	-4.88%	-1.63%	0.00%	1.63%	4.88%

In an equity research note from 2014, HSBC Global Research states that the accuracy of a valuation of Suzano Papel e Celulose is very dependent on pulp prices, which have a large effect on revenues and thus on cash-flows to the firm. As the firm has a high proportion of fixed costs relative to total costs, a decrease in revenues leads to a higher decrease in

Enterprise Value, in percentage terms. This excludes the potential financial effects arising from a lower EBITDA as a consequence of a revenue drop; indeed, for a highly leverage firm such as Suzano, with an interest coverage ratio at 3x in 2013, far below its peer group average. The potential problems from a lower interest coverage ratio are the worsening of credit terms, a larger probability of financial distress and the potential violation of debt covenants.

A sensitivity analysis was conducted to assess the change in enterprise value given a percentage increase/decrease in total revenues. For example, a 1% decrease in enterprise value leads to a 1.63% decrease in enterprise value. On the other hand, if annual revenues were to be 1% above the forecasted base case scenario, enterprise value would go up by 1.63%. A 3% increase/decrease in annual revenues has an impact of 4.88% in enterprise value.

		Terminal Value Growth Rate				
		0.0%	0.5%	1.0%	1.5%	2.0%
WACC	7.5%	7,371,635	7,719,948	8,121,848	8,590,731	9,144,866
	8.0%	6,938,233	7,236,017	7,576,342	7,969,024	8,427,154
	8.6%	6,483,693	6,733,016	7,015,136	7,336,978	7,707,568
	9.0%	6,217,151	6,440,189	6,691,106	6,975,478	7,300,476
	9.5%	5,914,120	6,109,165	6,327,157	6,572,397	6,850,336

Another sensitivity analysis performed relates two estimated variables with enterprise value, weighted average cost of capital and the growth rate of terminal value. It is customary to include this analysis in any equity valuation, as these variables depend on the methodology used and the judgment of the user. Besides, WACC and terminal value have a great impact on enterprise value – if, for instance, a growth in perpetuity of 2% was used, instead of 1%, the firm would be worth €700 million more and its share price would be higher than its 31st December market value of R\$ 9.24 per share. Conversely, a change in WACC also has a deep impact in EV – if a WACC 1% lower was used, the firm would be worth an extra €1.1 billion, assuming everything else constant.

8. Recent comparable M&A deals

The paper industry had several recent M&A deals involving both private and publicly-traded firms. I have chosen two examples to analyse more deeply as they are comparable to the proposed merger in a number of ways, including:

- The merging entities firms operate either in Brazil or Europe, or both;
- The M&A deal combined two firms operating in the same paper and pulp segments, as it is the case of Portucel and Suzano, which generate most of their paper sales from

printing & writing paper and are integrated pulp producers which also produce eucalyptus market pulp;

- The comparable mergers combine firms which sell their products abroad;
- Lastly, the M&A deals chosen involved firms with comparable sizes to Portucel and Suzano.

The first deal to be analysed is the 2011 merger of the Finland-based pulp and paper producer UPM and Myllylokoski Corporation, a paper producer based in Germany and Finland. Afterwards, the 2009 merger of the Brazilian companies Aracruz and VCP is looked upon. The two companies formed Fibria, the world's largest eucalyptus pulp producer, with 30% global market share.

UPM and Myllylokoski Corporation merger

"UPM has been very determined in implementing its long term strategy of being the cost leader in the European paper industry and the global leader in magazine papers. Consolidation and restructuring are the best way to make fundamental improvements in terms of cost efficiency and to create value in the paper business. Our position as a frontrunner in the industry enables us to make a step change in the profitability of our Paper Business", UPM's President and CEO Jussi Pesonen, 2011

The statement of UPM's President and CEO at the time of the acquisition of Myllylokoski summarizes the rationale for the takeover that was completed in 2011. UPM is a paper producer, operating primarily in the coated paper segment and producing pulp in several plants located in Europe and Latin America. Myllylokoski is a paper producer, which coated paper also represents the bulk of its operations. The company exported 95% of its production to Asia, Europe and the America. The firm was privately held at the time of the merger.

The merger was done through a cash and stock acquisition of Myllylokoski, being that UPM financed the acquisition with €800 million of bank debt and a €5 million share issue, with a market value of €60 million prior to the merger. This has led UPM to control the merged entity.

The rationale for the transaction was to achieve cost efficiencies and boost the paper business profitability. Specifically, UPM highlighted the key sources of value which supported the deal:

- Consolidate the operations and the uncoated paper sales segment. Together, the firms would initially have a market share of 29% in the European publication paper;

- Improve UPM's presence in some European paper markets where Myllylokoski had a stronger presence;
- Achieve cost efficiencies in the merged entity value chain;
- Improve distribution and logistics processes and the flexibility to serve new markets;
- Broaden UPM's product portfolio in the coated paper segment and target emerging markets with the resulting product portfolio

Through these sources of value, and the expectation that some financial synergies would also emerge, in the form of better credit terms, it was estimated that the merger would yield a one-off gain of approximately €300 million after the merger as well as €100 million in synergies per year, starting in 2012.

To realize the synergies, UPM estimated that integration costs would amount to €100 million to €150 million.

Aracruz and VCP merger: the creation of Fibria

In 2009, Fibria was created as the combination of VCP, the pulp and paper firm belonging to the Brazilian conglomerate Votorantim, and Aracruz, a Brazilian-based, publicly-traded, pulp and paper producing firm. After over a year of permanently ongoing negotiations, the world's largest pulp firm was created, controlling a third of the world's eucalyptus pulp market, with an annual capacity of 5.25 million tons of eucalyptus pulp.

The transaction was made through cash and stock, being that VCP's shareholder got 57.23% of Fibria while the rest would be owned by Aracruz's shareholders. The firms also agreed that the voting rights would be split equally through the shareholders of the two firms.

In terms of strategic rationale, the motivation behind the deal was similar to the deal of UPM and Myllylokoski. The firm's wanted to consolidate the supply of pulp, with a joint initial market share of 30% in the global eucalyptus pulp market. Their paper operations were also integrated, thus broadening their paper product portfolio which allows targeting new markets. Scale economies achieved throughout the value chain were also a key area of value creation, mainly through cost efficiencies. The firms also forecasted financial synergies and an improved ability to generate cash-flows to tackle their highly geared capital structures.

The firm adopted a cautionary at the potential synergies to be reaped. As such, the firms forecasted cost synergies in excess of €1 billion. No revenue synergies were considered to

justify the transaction, as the probability of materialization was somewhat uncertain and residual compared to the potential cost synergies.

9. Merger

9.1. Valuation without synergies

	€ '000	2014e	2015e	2016e	2017e	2018e
Unlevered FCF	€	114,737	491,725	758,903	732,587	721,320
Terminal Value	€					9,930,230
Discounted FCFF	€	105,979	419,523	598,048	533,243	7,161,349

Enterprise Value	10,475,090
- Debt	4,784,345
Equity Value	5,690,745
# Shares	1,803,776
Value per share	3.15

The first step to value a merger transaction is to value the two entities to be combined before accounting for synergies created and integration costs to be incurred. This means that both financial statements are combined, with the resulting value being equal to the sum of the two companies separated. With the base case pro-forma financial statements and the enterprise values already calculated in the *Valuation* section, the enterprise value of the merged entity is calculated straightforwardly by adding them together without accounting for any changes whatsoever. There is however, two issues which must be most thoroughly understood: cost of capital and taxes.

Adding Suzano and Portucel financial statements and computing the resulting free cash-flows to the firm resulted in an Enterprise value for the company of €10.475 billion, including excess cash. By simply adding the Enterprise Value figures together, one would get roughly the same result (0.04% less). The equity value, on the other hand, is €5.691 billion, or €3.15 per share. The enterprise values considered were the DCF valuation results, the common model used to value both companies, thus allowing to combine the cost of capital, WACC in this case, more readily than if APV was used.

Consolidating the P&L statement until EBIT is simply summing the two figures. From EBIT, taxes must be deducted to get the NOPLAT. To calculate taxes to be supported by the merged entity, the tax rate was computed as a weighted average of each firm EBIT. As such, the

resulting tax value will be rather close to the 25% effective tax rate of Suzano, which contributes with 70% of total EBIT for the five years considered in the estimation period.

Regarding the cost of capital, WACC was calculated without accounting for any synergies or variations of any kind. Both companies have the same beta and target debt to market capitalization, therefore the same figures were considered. The merged entity equity market risk premium was computed by the weighted average of enterprise values, yielding a result of 6.4%, once again close to the figure of Suzano - the equity market risk premium of Portucel is 6.1% while that of Suzano is 6.5%. Finally, the cost of debt of the consolidated firm was calculated as a weighted average of each of the firm's outstanding debt in 2013. This yielded a result of 4.6%. Inputting these changes and recalculating the WACC rate yields a result of 8.3%.

9.2. Synergies

The purpose of any merger is that the merged entity has higher value than the sum of both parts. The added value from the combination of two firms, the synergies, arises from the combination of operations as well as financial value creation. In this section, operational and financial synergies are proposed and discussed, with the former being broke down into cost and revenue synergies. The synergies proposed take into account the characteristics of the two industrial firms and similar mergers concluded in the industry. The last part of the section considers the costs arising from the integration of the two companies.

9.2.1. Cost Synergies

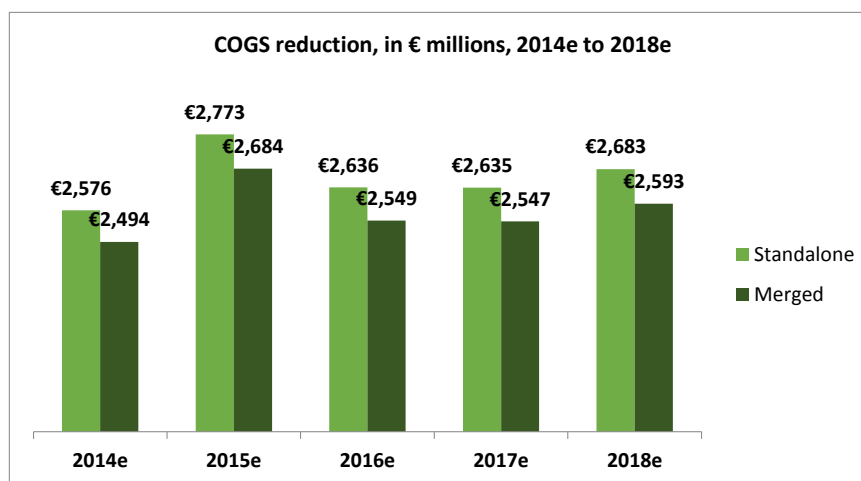
Scale economies

Cost efficiencies are to be reaped through the consolidation of the two companies resulting in one with larger scale. As it is referred in the *recent mergers section*, one of the main drivers of the industry M&A activity is the achievement of scale economies which translate into higher operational margin through the decrease of operational expenses.

Cost of Goods

As it is shown in the two mergers discussed in the section, COGS decrease as a percentage of revenues when two firms with similar operations merge. The reduction, in the case of the proposed merger, will be achieved mainly through higher negotiation power with suppliers and larger quantity discounts. As both firms produce the same kinds of paper, they use the same suppliers. A 2% reduction in the weight of COGS in total revenues will be achieved as firms consolidate their purchase chemicals and other raw materials and exchange expertise in

their production processes. In absolute terms, the merger would allow for savings of around €130 million a year.



These savings estimates lag the savings which could be achieved if firms' industrial units were located in the same geographic region, as it was the case of UPM and Myllylokoski. Nevertheless, firms source their supplies globally, reason why purchasing can be centralized and then materials allocated between Portugal and Brazil.

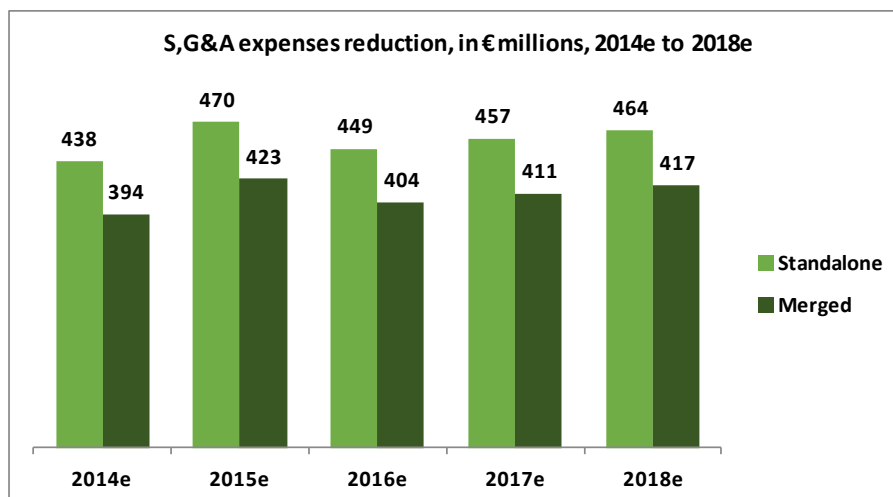
Sales, General and Administrative Expenses

A merger typically generates the bulk of its cost synergies by savings in these types of costs, commonly known as overhead costs. Overhead costs go down by 17% on average after a merger of firms in the same industry and with similar size, according to a 2009 Deloitte study..

This merger will bring together two firms which are already large when compared to its peers. Both have highly professionalized processes which will overlap upon the merger. Indeed, as the firms have similar operations and generate revenues from products in the same segments, their corporate organization has overlapping areas, which will turn redundant upon the merger. First, the concentration of the head-office will generate annual savings in building rents. Although corporate offices in both countries will be maintained, it makes sense that the head-office will move to Brazil, where growth opportunities are located. Adding to it, areas such as IT, marketing and sales and distribution will be consolidated and reduced when they become redundant. R&D and product development will also benefit from consolidation.

This will result in savings in administrative costs, rents and salaries, forecasted at 11% of current S, G&A costs.

The benchmark used for the forecasted cost reductions and the post-merger reorganization of the head-offices was the 2012 acquisition of CIMPOR by Camargo Corrêa, which headquarters were established in Brazil and the marketing, IT and corporate support areas, among others, were significantly reduced.



9.2.2. Revenue Synergies

Revenue synergies depend more on external factors than cost synergies. They tend to take longer to achieve and are more exposed to changing market conditions. As revenue synergies have a higher degree of uncertainty than cost synergies, M&A deals relying on revenue growth to create value are viewed with skepticism. Nevertheless, these can be an important source of value in M&A deals, especially if both companies can complement their distribution channels or if their pricing power increases after the merger.

Suzano and Portucel already operate at full capacity and are able to sell their entire output, meaning that any revenue synergies achieved in their existing operations must be created through higher average price sold. If quantities sold were to increase, that would necessary happen through capacity expansion – to illustrate that, a project NPV was developed and discussed in a separate section.

Merging the distribution channels and product portfolios of Suzano and Portucel will create value through economies of scope, forecasted to be in the order of 1% increase in revenues per year, an extra €45 million a year from their forecasted revenues as standalone entities. While it is a marginal increase, with limited impact on firm value, a cautionary approach was used to estimate revenue synergies. This was based on historical examples where actual revenue increases where a fraction of estimated revenue before the acquisition. One extreme

case of revenue synergies failing to materialize was the merger of Alcatel and Lucent. While the rationale for the deal was improved competitive position and thus higher prices and number of customers, the combined entity actually decreased revenues substantially in a short-period of time after the deal was concluded.

The firms will grow their combined revenues through economies of scope in two distinct ways. First, their combined product portfolios will serve its current customers better, with more purchasing options. Cross-selling is a rather obvious deal generation as the firms have products targeted for the same segments – mainly office and family customers for its Printing & Writing paper brands – but currently operate in distinct regions. Furthermore, up-selling, whereby a seller leads the customer to purchase more expensive, premium items, will also take place when the best-seller Navigator brand is marketed through Suzano's distribution channels.

Besides cross-selling and up-selling, the firm will be in an improved competitive position to target new markets with an enhanced product portfolio and a larger and more efficient distribution and logistics channels. Being one of the world's largest Printing & Writing players, with state-of-the-art mills and a broad and high quality product portfolio, will mean a comparative advantage relatively to local players which can turn the merged firm into a successful incumbent in the markets neither are present currently, such as in fast-growing Asian markets.

9.2.3. Financial Synergies

Financial synergies can create substantial value in mergers & acquisitions. These are the result of the combination of relative financial strengths of each entity and translate into lower cost of capital or a step up in cash-flows.

This merger will combine Portucel, a firm with excess cash, low leverage and stable positive free cash-flows but lacking investment opportunities to deploy its resources and Suzano, a firm with plentiful growth opportunities, being in the world's most attractive location to invest in the pulp and paper industry, but using all its free cash flows to reduce its leverage, which is currently in unsustainable levels should paper and pulp prices fall. A merger would eliminate this underinvestment problem, and allow the new entity to pursue new industrial projects in Brazil. The merged entity would enjoy improved leverage ratios – the interest coverage ratio would increase by 1.3x upon the merger – which would make the deleveraging less urgent. Furthermore, Portucel has excess cash which could be used either to decrease debt outstanding or finance capital expenditures.

While it is difficult to measure the impact of this synergy beforehand, it is assumed that the merged firm will develop a paper mill in Brazil using Portucel's excess cash and forecasted free cash flows in 2014 and 2015. The results of the project are shown in *section of synergies*.

There are several other ways this type of synergies can materialize. One such way is the reduction of the cost of capital as operations are more diversified and, as a result, cash-flows are more stable and so the cost of equity and/or the cost of debt drop. The proposed merger won't produce such synergies as the two firms' earnings - as well as costs - are highly correlated, as they depend on the same indexes. If anything, geographical diversification – Suzano is exposed to the Latin America and Portucel to Europe - could yield a lower cost of capital. However, pulp and paper prices as well as raw materials costs are highly correlated globally, which makes geographical diversification an unrealistic source of value.

The other common types of financial synergies are also either residual or outright inexistent. Tax losses carry forwards, the ability of a firm to deduct losses incurred in past years when it has profits, can have generate some value in 2014 as Suzano had negative net income in 2013. However, these losses were minimal which means that deductions will be either inexistent or residual.

9.2.4. Capitalize on Portucel mill development expertise and use excess cash

The two firms could combine their strengths to develop a paper industrial facility mill in Brazil, producing Portucel's premium paper products to be distributed to Brazil and South American markets. This has long been a project of Portucel management, which acknowledges the fact that it has to diversify its production base to reach more customers. Furthermore, it enhances the value of Suzano through the integration of more pulp and the retention of Portucel expertise in developing mills which can use in its existing units.

The paper products Portucel carries in its portfolio are among the most premium priced papers in Europe, where the firm distributes the bulk of its best-selling, premium paper brand, the office paper Navigator. Besides being able to charge a higher pricing due to differentiation, the premium paper segment is highly resilient to index price changes. It comes as no surprise that every firm seeks to increase the quality of their products, usually through changes in the manufacturing process of paper of by changing the type of pulp used, with the ultimate goal of placing a larger percentage of their revenues in the premium segment.

While Portucel is not able to increase its paper output, Suzano on the other hand, has plentiful opportunities to expand organically in its paper segment. Besides, it is the leading paper distributor in Brazil and has a strong presence throughout South America. The new paper unit to be jointly developed would capitalize on Portucel expertise and would produce premium printing & writing paper products such as the Navigator brand.

The development of a paper mill would be located near one of the existing pulp mills, which output could be integrated into the paper mill. It is estimated that it has a similar construction cost than the paper mill Portucel developed in 2011, the Setubal mill. The investment is to be financed with a debt issue in the same amount and a new mill typically takes two years to become operational.

The revenues accruing from the new mill in 2016 and thereof are estimated through the forecasts set out in the *forecasts section*. The operating margin (EBITDA margin) is 15% in 2016 and 25% thereof as fixed costs are diluted when the mill operates at full capacity. In terms of discount rate of the project, the WACC rate of the merged entity assuming no synergies is considered, at 8.2%. This yields a project NPV of €418 million and an Internal Rate of Return of 14%.

	€ '000	2014e	2015e	2016e	2017e	2018e	2019e	2020e
Revenues	€			289,793	417,962	422,429	427,921	433,484
Paper price	€			828	836	845	856	867
Capacity	thousand tons			350	500	500	500	500
EBITDA	€			43,469	104,490	105,607	106,980	108,371
margin	%			15%	25%	25%	25%	25%
D&A	€			16,667	16,667	16,667	16,667	16,667
DEPR	%			3.3%	3.3%	3.3%	3.3%	3.3%
EBIT	€			26,802	87,824	88,941	90,314	91,704
taxes	%			25%	25%	25%	25%	25%
NOPAT	€			20,102	65,868	66,705	67,735	68,778
Investment in WC	€			14,490	6,408	223	275	278
D&A	€			16,667	16,667	16,667	16,667	16,667
CAPEX	€	-250,000	-250,000	-	-	-	5,500	5,500
Unlevered FCF	€	-231,077	-213,587	22,279	76,126	83,149	78,627	79,667
Terminal Value 1%	€							1,108,194
Discounted FCFF	€	-231,077	-213,587	17,593	55,565	56,097	49,032	684,679
NPV		418,302						
IRR		14%						

9.3. Integration Costs

M&A deals are not all about synergies as these come at the cost of integrating the two companies together. Integration of two companies is more than integrating two entities –

indeed, the way finance functions are integrated differs from what it takes to consolidate the R&D activities of two companies. Other key integration areas include sales and marketing, operations, human resources and IT and technology. To assess integration costs, it is important to draft a plan on how each of these areas will be integrated and derive a budget from there, understanding the timing and cost linked to the necessary reorganization. Besides these costs, there are upfront fees incurred with lawyers, consultants and other professional services providers whom support and manage the process.

In an Ernst&Young (2014) study, a survey shows that merging firms spent an average of 14% of combined revenues in integration, spanning over the first two years. While this is used a benchmark for this deal there are two specificities in this deal which are the basis to estimate integration costs at 10% (€355 million) of combined revenues in 2013, distributed by €213 million (60%) in 2014 and €142 million (40%) in 2015.

Firstly, the average size of the firms surveyed in the study, in terms of sales, is €256 million – Suzano and Portucel combined turnover was €3.5 billion in 2013. However comparable, scale economies arise in integration costs, too.

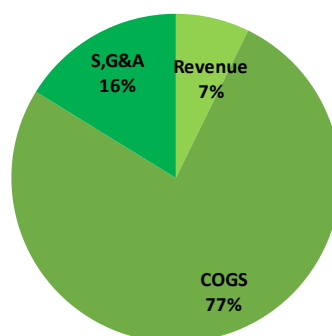
Secondly, the proposed merger won't be as complete a merger what is observed in other industries, because Suzano and Portucel can only merge their operations partially contrary to other industries where operations are completely integrated. Both firms operations can be described as transforming wood and other raw materials in pulp and paper. As Suzano and Portucel have their industrial units in different locations and they cannot be integrated in any conceivable way. As such, the mills in Portugal and Brazil will continue to operate independently after the merger and no integration costs will arise as operations will remain unchanged.

9.4. Valuation of the merged firm

Following laying out the assumptions and estimates of the synergies that this merger will yield and calculating the NPV of the project to be undertaken by the merged firm, in this section the value it will create to the firm is investigated. From the starting point of the valuation of the merged entity without synergies, Enterprise value is added of synergies and deducted of integration costs. Finally, the NPV of the project is added to enterprise value. Each synergy is added *ceteris paribus* in order to assess the impact of each individually on Enterprise Value. The integration costs, estimated at €355 million over two years, are deducted in all cases, meaning that the enterprise value with each synergy is already net of integration costs.

9.4.1. Synergy Valuation

Synergy Source	Value of synergy	Enterprise Value	
		with synergies	w/o synergies
Revenue	45,631	10,520,721	10,475,090
COGS	482,200	10,957,290	10,475,090
S,G&A	102,028	10,577,118	10,475,090
Total	629,859	11,104,949	10,475,090



Starting from the enterprise value without synergies, the first adjustment made was to deduct integration costs out of the base valuation without synergies. The rationale to deduct integration costs beforehand is to obtain the value which each synergy above integration costs. This way, it is possible to calculate enterprise value as if that was the only synergy to materialize after the merger. The valuation without synergies column did not suffered any adjustment whatsoever. Integration costs have a negative impact in the order of €318 million on enterprise value, close to its actual cost because they occur in 2014 and 2015.

The synergies were incorporated individually from top to bottom, meaning that revenue synergies were accounted for firstly. Regarding the 1% increase in revenues which was estimated in the *Synergies section* the value of the synergy calculated above integration costs amounts to €45.6 million (or €354 million without accounting for integration costs). Revenue synergies have a weight of 7% on total synergies calculated.

Scale economies in the cost of goods sold, the cost with the most weight in both firms' cost structure, will be the main source of value creation. This is a variable cost which depends on quantities sold and it is often a key driver of value creation in mergers, as economies of scale accruing to the larger firm are reflected on this item. In this merger, it accounts for more than half total value created (77% or €482 million).

Lastly, Sales, General and Administrative costs will also be reduced in the combined entity. These costs are mainly fixed costs, although they have a variable component as well. It is assumed that the merged firm will be able to trimmer expenses in this item, in the ways already outlined in the previous section (see *Synergies section*). In total, enterprise value will increase €420 million which means that value created after integration costs will amount to €102 million. In relative terms, S, G&A costs account for 16% of total value created net of integration costs.

The enterprise value resulting from the incorporation of the value generated by the synergies is €11.1 billion, €630 million or 6% more than the case with no synergies and integration costs,

9.4.2. Valuation accounting for the new project

NPV of the project	418,302
Total EV Value inc. project	11,523,252
Total Value Created	1,048,161
Equity Value	6,738,906

Accounting for the paper mill to be jointly developed in Brazil, the total value created in the merger would surpass €1 billion, already net of integration costs. As a result, the combined enterprise value will be €11.5 billion, and the equity value, calculated subtracting the debt outstanding of both firms, will be €6.7 billion. This enterprise value is 10% higher than the enterprise value of the two firms combined as standalone entities.

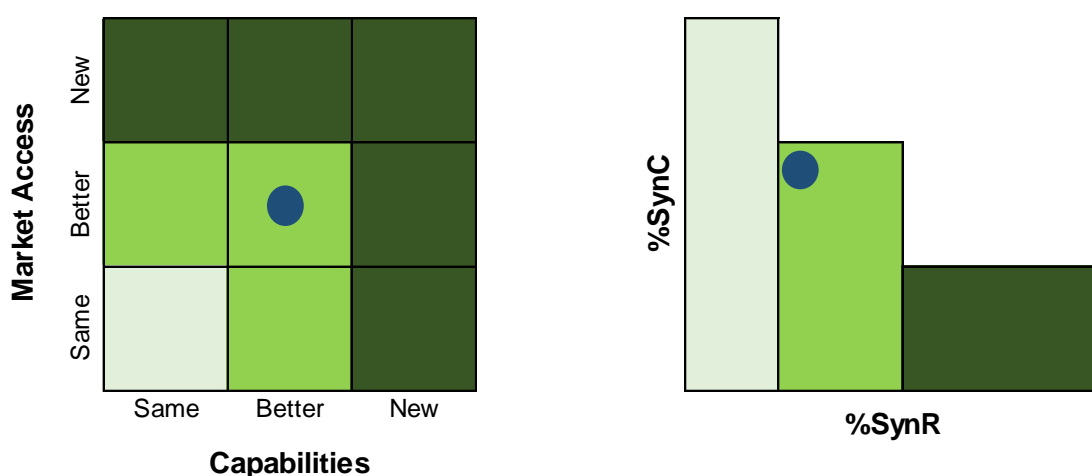
9.4.3. Operating sense of synergies

After valuing the synergies using the DCF model – and the valuation of the merged entity – the following step is to ensure that this value makes operating sense. This means that the synergies proposed ought to be criticized in the way they adhere to the characteristics of the firms being merged. The set of synergies proposed is said to be reasonable if the benchmark transactions occurred in the past have led to similar outcomes than what is expected in this merger. The analysis is supported by the framework of Sirower and Sahni (2006), which is detailed in the *literature review section*.

Merging Portucel and Suzano will yield a combination of cost and revenue synergies, the latter with a reduced weight because the firms do not have ability to expand production with their current capacity. With the construction of a new mill, they will be able to fully reap the benefits of the enhanced competitive position and improved market access, thus generating value which neither could achieve standalone. It is also of important to realize at this point

that most synergies will be arising from the paper segment – paper distribution, paper brand portfolios, paper R&D and sales processes will become the main enhanced areas through the merger. However, as pulp is integrated in paper production, the allocation of synergies between segments becomes difficult and unclear. Besides, both companies pulp segment will also yield direct synergies from combining R&D expenses and raw material purchases.

Applying the methodology of Sirower and Sahni (2006) it is possible to observe graphically that this merger brings together new capabilities and market access. The former in terms of mill developing expertise and processes which are interchanged between the two companies and the latter in terms of targeting new markets where each firm is established and also an improved competitive position to target new, fast-growing markets in Latin America and Asia. While the synergies estimated are mainly cost synergies, the development of the new mill in Brazil will improve revenues to an extent that none firm could achieve as a standalone firm. Although these are not synergies, it is a value creation nonetheless and therefore included in the value created by the merger as part of revenue synergies. Accounting for that, the weight of revenue synergies increases in total synergies and it can be concluded that the merger value created makes sense applying the methodology.



9.5. The Acquisition

9.5.1. Bidder and target definition

A merger between Suzano and Portucel would maximize value by being a friendly merger, with the agreement of shareholders from both parties. This is particularly important considering that Suzano Papel e Celulose is controlled by Grupo Suzano, a Brazilian conglomerate, and Portucel is controlled by Pedro Queiroz Pereira through Semapa and Seinpar, which together hold 76% of Portucel’s common shares. In light of this fact, it is clear that a merger is

dependent on the two groups reaching an agreement. In order to engage the two groups in a friendly deal, they must retain control of the merged firm, with the two holding groups agreeing on sharing control.

Being a friendly acquisition, the bidder would be Suzano, due to its relatively larger size compared to Portucel and as its shares appear overvalued when compared to the valuation performed. This would give them an incentive to use stock in the deal, based on the accretive earnings argument outlined in the *literature review section*.

A cash offer would not serve the purpose as that would mean an acquisition of Portucel, by Suzano. An acquisition would have to be hostile because Pedro Queiroz Pereira, through Semapa and Seinpar, has repeatedly stated that it envisages maintaining a controlling stake in Portucel. It is thus likely that Mr. Queiroz Pereira would be interested in sharing control of the merged firm with Suzano, if they are able to agree on the management and vision for the firm.

9.5.2. Distribution of the synergies

The value created by synergies must be allocated to the company responsible for bringing the assets or capabilities into the merger in order to evaluate share of the synergies each firm should own after the merger. However, it has been found that, historically, bidders tend to forgo a part of the synergies they create in the benefit of targets, which are in turn earning a higher value than the synergies they are responsible for.

The bidder, Suzano, will bring its organic growth opportunities to the merger. The firm has the forestry assets and the market power in South America to expand its business in the paper segment. In terms of the pulp segment, the firm is able to produce at a lower cost than Portucel, as well as most other industry players, due to its large scale and ability to produce eucalyptus wood at low cost.

On the other hand, Portucel has the most efficient mill in Europe and extensive expertise in developing paper and energy mills inexpensively. Adding to it, its paper products have a lot of perceived quality, illustrated by the fact that the firm generates most of its sales in the premium segment. These brands will have future demand in the markets where Suzano is already established, which are expanding its premium segments as economies develop and purchasing power increases, as shown in the *industry review section*.

Negotiation Power – BATNA approach

The negotiation power of each firm weighs in on synergy distribution – if one firm can achieve a similar result by other means or if it has less to benefit from the deal proposed, that firm is able to negotiate from a position of higher power. To assess the position the firms enter into the negotiations, the Best Alternative to Negotiated Agreement (BATNA) methodology is used Roger and William (2011). Through this methodology, negotiation power is given by the alternatives a firm has if the current negotiation fails. It can be seen as a leverage point during negotiations because a firm should not accept a deal creating value below its best alternative.

The need of doing the proposed deal can be observed considering how firms are operating currently, as separate companies. Portucel has been able to achieve higher margins than the industry and freeing cash flows sufficient to pay dividends and accumulating cash, while maintaining lower debt levels than the industry. However, it has reached a plateau in revenue growth and lack opportunities to deploy its resources and expand. Suzano has been able to sustain its operating margin above the industry and it can be said to one of the world's firms with more growth opportunities, due to its extensive availability of raw material and consolidated pulp and paper distribution channels worldwide. However, its leverage levels are unsustainable and the high cost of borrowing has made the company struggling to be profitable – in the last two years, it reported losses.

To address the above mentioned problems, the proposed deal is adequate, although other deals are possible. Suzano could try to cope with its leverage problems on its own as the new mill generates more free cash flows to service debt. Alternatively, it can partner with another firm in Europe or North America which would have the means and capabilities required to pursue the investments and market expansion available, while creating scale economies. Portucel could also encounter other players with growth opportunities which it can add value to and achieve scale economies – these firms are found either in Brazil or other country with low pulp costs and a growing market.

In conclusion, both firms contribute to the synergies in similar terms and the negotiation power is equivalent. As a result, the value created in the merger should be divided proportionally, as a percentage of their standalone equity valuation through DCF. Specifically, Portucel will earn 46% of the synergies and Suzano the remaining 54%.

9.5.3. Method of payment

The method of payment chosen for an acquisition conveys a lot of information about the bidder's intentions and views about its own firm and the target alike. Specifically, the decision

between using cash or stock as the payment method has to do with how firm value is understood, the synergies to be realized and the stock price of the acquirer and the target. If the bidder's stock price is perceived as overvalued relatively to the target's stock price, using its stock rather than cash is cheaper. The decision also has to do with control – if the bidder's management believes it can create value through controlling the merged firm, cash should be used. In other words, if the managers of the bidder believe they can manage the target firm better than it is currently, value of control exists. These issues are discussed thoroughly in the *literature review section*.

Historically, it has been found that cash-based deals significantly outperform those with stock as the primary method of payment. The common explanation for this fact is that the market regards cash deals as more trustworthy, as it is a sign of the bidder's confidence in the deal. Indeed, if the deal is financed with debt and synergies fail to materialize, the firm can experience financial distress. More recently, low borrowing costs and the global cash balances accumulated in recent years has served as an incentive to use cash for acquisitions.

It seems that using cash as the method of payment in M&A is the default option in any deal, because initial returns are higher and that better performance persists through the medium term (1 to 2 years, at least). If the acquirer opts for the use of equity, this decision must be backed by strong evidence that it is effectively the right option. Otherwise, failing to support this decision with a clear rationale and value added proposal may dictate a negative market reaction, translated in stock price drops, which are found to be very difficult to revert over time.

The proposed merger will be an equity deal, with Suzano offering to acquire Portucel exclusively with stock. This method of payment is suitable for Suzano for a number of reasons, some of which were already explained in the *Bidder and target definition section*. Firstly, there is the willingness of both party shareholders to share control of the merged firm. Besides, Suzano stock appears overvalued, accordingly to the valuation – the share closed at R\$ 9.24 on 30 December 2013 while the fair value for each share was found to be R\$ 8.06, implying an overvaluation of 15%.

The use of stock instead of cash is also preferable because the leverage ratios of the merged entity. With the use of stock, Suzano would not have to raise debt to finance the acquisition. This, in turn, will mean that the interest coverage ratio of the merged firm, already accounting for synergies, will stand at 4.5x, enough to be awarded a rating of BBB Damodaran (2010) (see

appendix 4). If cash were to be used, and assuming that Suzano would finance the acquisition entirely with debt, the rating would be much lower than BBB, with the surge of debt levels and consequent interest payments. In fact, it is uncertain that Suzano would be able to raise enough debt to finance the acquisition at all. Assuming the availability of debt financing, the merged firm would have a coverage ratio below 2.5x, which corresponds to a rating of B (see appendix 4), meaning the merged firm would not be awarded an investment grade rating (only credit ratings above BBB are considered investment grade).

9.5.4. Takeover offer

The offer will be a tender offer, targeted directly at Portucel shareholders. The ultimate decision will be of the shareholders, not management. The deal must be welcomed by the shareholders as a friendly deal, particularly by the Semapa and Seinpar, the holdings which control 75% of Portucel. With 46% of the merged firm, Portucel shareholders, and the market in general, are likely to regard this as a fair deal. In fact, with this deal, shares of Portucel are valued at €4.32, a 49% premium over stock price at December 2013, and an 18% premium over the estimated fair value of €3.65.

The fact that this offer will only proceed with the agreement of the shareholders of the controlling holdings will put pressure on the remaining shareholders to regard the deal as friendly and support the bid. It must also be made clear that this deal is preferably to a cash deal because, one, target shareholders will have access to the value created in the merger and, two, due to the leverage restrictions faced by Suzano, the deal is only possible with stock as method of payment. Furthermore, the deal must be regarded as an unique opportunity to not only diversify their geographic exposure but to set a new path of growth for Portucel, which has reached a plateau in terms of revenue growth.

The total acquisition price will amount to €3.108 billion, corresponding to €4.32 per share. Semapa and Seinpar will own 35% of the new firm and, being the largest shareholder.

PROPOSED OFFER

Acquisition Price	3,108,385
Acquisition Price per share	4.32
Premium over market price	55%
Total Value of equity	6,738,906
% in the new company:	
- Suzano (Acquirer)	54%
- Portucel (Target)	46%
Method of payment:	
- Stock	100%
- Cash	-

9.5.5. SVAR

To compute SVAR, the premium paid is divided by the acquirer market value before the merger. The result is the percentage of shareholders' equity at risk if synergies end up being null. As this is an all-stock deal, the formula is adjusted to incorporate the fact that the acquirer will only bear the synergy risk corresponding to its equity in the merged firm. The resulting SVAR for Suzano's shareholders is 16.9%.

9.5.6. Other Potential Bidders

M&A deals often build up competition as alternative bids arise, leaving target shareholders with more than one deal to choose from, which can differ not only in price but in other terms. Consequently, the success of an acquirer in concluding a transaction, and the terms it is concluded, is affected by the alternative bids that arise along the takeover process. It is thus of paramount importance to be aware other potential bidders beforehand. These can be divided into two broad categories – bidders who can create synergies from the merger, commonly denominated strategic acquirers, and bidders capable of adding value in other ways apart from synergies, denominated financial bidders.

Financial bidders are private equity funds who, in this case, would be interested in acquiring Portucel, taking it private and create value through operational or financial enhancements and then divest, either through an IPO or sale of the firm, as a whole or in parts, in a private transaction, having a target rate of return on their investment (IRR). These types of funds can target all types of companies or be focused in specific industries, geographic regions or in a specific stage of the life cycle. Given the recent increased weight of deals private equity funds in total deals KPMG (2013), and the fact that a few private equity deals were recently concluded in Portugal, financial bidders are likely to be interested in this deal and therefore must be regarded as potential competition.

Regarding the strategic bidders which must be considered, the lot is composed of paper companies looking to achieve scale and scope through acquisitions. UPM and Stora Enso, two of the world's largest paper companies, would be suitable acquirers. Besides the ability by either firm to integrate Portucel in a much larger organization spread across the globe, these firms have a track record of acquiring European companies in the paper industry. Furthermore, their inability to grow organically and their pursuit of scale economies and industry integration leads analysts to agree that these firms will be acquiring in the near future Rosendahl (2013).

A merger between Portucel and Altri, a Portugal based pulp and paper producer, would also make strategic sense. The two firms have their industrial facilities in Portugal and have similar operations, although Altri is significantly smaller than Portucel (Altri's market capitalization stood at €500 million in the end of 2013). The two firms already cooperate in certain areas, such as forest management and energy production, and its combination could yield significant synergies, especially on the cost side.

9.5.7. Execution Risk

Successfully deliver the value promised to shareholders in a M&A deal is one of the hardest challenges in today's business and the complexity present in a deal is far higher than it was a decade ago. As discussed in the *Literature Review section* a deal can be segmented into three sub-stages, pre-merger, during the merger and post-merger, which have different challenges and involve different players, both internal and external to the firm.

In the pre-merger stage, the uncertainty and the subjective perceptions of the people affected by the merger creates the risk of the deal falling through at this stage, if the parties involved fail to agree on a plan of action and previously negotiated terms. In order to align goals and devise a plan to proceed to the next stage, management must identify the sources of uncertainty and mitigate the subjectivity of perceptions through an identification of the key variables which can compromise the deal, which is the due diligence stage. With that information, management should communicate the implications of the merger, shareholders and employees, once the deal is concluded. Possible legal barriers are also an issue to be resolved at this stage.

The merger stage begins once the merger is officially announced. Over this stage, a merger timeframe must be defined and the roles and responsibilities in the merged firm must be defined. During the stage, information must be communicated as soon as it is known and the changes starting once the merger is concluded must be addressed internally and to the

market. Finally, in the post-merger stage, actual integration of the two firms begins. At this point many risks can materialize, especially in the form of conflicts between management and/or employees from each firm and the emergence of new information with impact on the value proposed before the merger.

The proposed merger will be affected by the abovementioned risks, as all mergers are. Nevertheless, there are two types of risk that are likely to arise and must be discussed in further detail. Cultural risk can be defined as the possibility of conflicts among each firm's managers and employees arising. Indeed, cross-border deals more than often entail this kind of risk, as discussed in the *Literature Review section*. The proposed merger will bring together two organizational structures which have their own processes and business culture. Although many deals between Portuguese and Brazilian companies happened in the past, a plan must be devised to identify and mitigate the sources of this risk. Additionally, the pre-merger stage is of particular importance as neither firm as an acquisition track-record. With the lack of established deal-making processes in either side, it is likely that without a structured and clear plan from the outset, managers and shareholders might lose their focus and disrupt the deal momentum.

10. Conclusion

There has been recently a wave of M&A deals in the pulp and paper industry fuelled by two main rationales: concentrate supply in mature markets and seek growth through acquisitions in growing markets in emerging countries in Asia, Latin America and Eastern Europe. The rationale of the proposed transaction falls into the latter category.

The review of the industry and the two companies to be merged provided the basis to support the strategic rationale that this merger will create value by combining firms with similar business models but operating in rather differently environments. Portucel has been successful in its specialization of producing premium paper products in Portugal and distribute them across Europe. Suzano, on the other hand, has been able to capitalize on its relative advantage in pulp production to be profitable and growing organically through industrial development in Brazil.

The proposed merger will enhance Suzano's ability to pursue the vast growth opportunities which still present in Brazil while it allows Portucel to depart from its inability to expand operations and increase revenues. Value will be created mainly through cost efficiencies in the

value chain, higher selling prices due to increased market power and the joint development of industrial operations in Brazil to increase paper production.

It is concluded that Suzano should acquire Portucel in an all-stock offer, valuing the Portuguese firm at €4.32, a premium of 55% over its 31 December 2013 market capitalization. Through the proposed takeover offer, Portucel would be entitled to 46% of the merged firm, with the remaining 54% allocated to Suzano's shareholders.

11. Appendix

Appendix 1: Balance Sheet and Cash-Flow Statement – Portucel

Balance Sheet	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Assets						
Non-Current Assets	€ 1,838,588	€ 1,755,321	€ 1,656,085	€ 1,615,923	€ 1,621,196	€ 1,629,523
Goodwill	€ 376,756	€ 376,756	€ 376,756	€ 376,756	€ 376,756	€ 376,756
O. Intangible Assets	€ 3,350	€ -	€ -	€ -	€ -	€ -
Plant, Property and Equipment	€ 1,316,186	€ 1,241,385	€ 1,182,776	€ 1,140,610	€ 1,115,808	€ 1,108,547
Biological Assets	€ 111,339	€ 111,339	€ 111,339	€ 111,339	€ 111,339	€ 111,339
Available-for-sale financial Assets	€ 229	€ -	€ -	€ -	€ -	€ -
Current Assets	€ 981,082	€ 991,961	€ 1,003,371	€ 999,731	€ 975,847	€ 966,860
Inventories	€ 202,925	€ 208,265	€ 199,076	€ 192,951	€ 183,763	€ 183,763
Accounts Receivables	€ 200,812	€ 216,989	€ 222,709	€ 236,201	€ 240,458	€ 245,028
State Entities	€ 53,050	€ 53,050	€ 53,050	€ 53,050	€ 53,050	€ 53,050
Cash and Cash Equivalents	€ 524,294	€ 513,657	€ 528,535	€ 517,529	€ 498,576	€ 485,018
Total Assets	€ 2,819,669	€ 2,747,283	€ 2,659,456	€ 2,615,655	€ 2,597,043	€ 2,596,382
Liabilities and Equity						
Non-Current Liabilities	€ 966,489	€ 732,402	€ 829,283	€ 831,154	€ 843,548	€ 856,853
Deferred Taxes	€ 99,280	€ 99,280	€ 99,280	€ 99,280	€ 99,280	€ 99,280
Provisions	€ 49,317	€ -	€ -	€ -	€ -	€ -
Interest-bearing Liabilities	€ 771,632	€ 588,863	€ 685,744	€ 687,616	€ 700,009	€ 713,314
O. Liabilities	€ 46,259	€ 44,259	€ 44,259	€ 44,259	€ 44,259	€ 44,259
Current Liabilities	€ 373,355	€ 580,567	€ 463,368	€ 457,657	€ 451,210	€ 454,154
Accounts Payable	€ 201,053	€ 208,265	€ 199,076	€ 192,951	€ 183,763	€ 183,763
Interest-bearing Liabilities	€ 59,702	€ 259,702	€ 151,692	€ 152,106	€ 154,848	€ 157,791
State Entities	€ 112,600	€ 112,600	€ 112,600	€ 112,600	€ 112,600	€ 112,600
Total Liabilities	€ 1,339,844	€ 1,312,969	€ 1,292,651	€ 1,288,811	€ 1,294,758	€ 1,311,007
Share Capital	€ 767,500	€ 767,500	€ 767,500	€ 767,500	€ 767,500	€ 767,500
Treasury Shares	-€ 94,305	-€ 94,305	-€ 94,305	-€ 94,305	-€ 94,305	-€ 94,305
Legal Reserves	€ 75,266	€ 75,266	€ 75,266	€ 75,266	€ 75,266	€ 75,266
Currency Translation Reserves	-€ 1,297	€ 1,000	€ 1,000	€ 1,000	€ 1,000	€ 1,000
Retained Earnings	€ 522,172	€ 530,846	€ 476,943	€ 427,802	€ 390,407	€ 366,045
Net Profit for the Period	€ 210,038	€ 154,008	€ 140,401	€ 149,580	€ 162,417	€ 169,870
Total Equity	€ 1,479,374	€ 1,434,315	€ 1,366,805	€ 1,326,843	€ 1,302,285	€ 1,285,375
Total Equity + Liabilities	€ 2,819,218	€ 2,747,283	€ 2,659,456	€ 2,615,655	€ 2,597,043	€ 2,596,382

Statement of Cash Flows	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Operating Activities						
Net Income	€ 210,042	€ 154,008	€ 140,401	€ 149,580	€ 162,417	€ 169,870
Depreciation & Amortization	€ 102,821	€ 114,401	€ 113,323	€ 112,705	€ 112,569	€ 112,958
Changes in non cash WC	€ 15,000	€ 14,304	€ 5,720	€ 13,491	€ 4,257	€ 4,571
Others	€ 31,000					
Cash flows from operations	€ 328,863	€ 254,106	€ 248,004	€ 248,793	€ 270,729	€ 278,257
Investment Activities						
CAPEX	€ 19,217	€ 39,601	€ 54,714	€ 70,538	€ 87,767	€ 105,696
Cash flows from investments	€ 19,217	€ 39,601	€ 54,714	€ 70,538	€ 87,767	€ 105,696
Financing Activities						
Net Borrowings Variation	€ 120,000	€ 17,230	-€ 11,129	€ 2,286	€ 15,135	€ 16,249
Dividends and Reserves	€ 201,364	€ 207,911	€ 189,542	€ 186,975	€ 186,780	€ 169,870
Cash flows from financing	€ 81,364	€ 225,142	€ 200,671	€ 189,261	€ 201,914	€ 186,119
Cash&Cash Equivalents Variation	€ 228,281	-€ 10,637	-€ 7,380	-€ 11,006	-€ 18,953	-€ 13,558
Cash&Cash Eq. Beginning of the period	€ 329,368	€ 524,294	€ 534,930	€ 527,550	€ 538,556	€ 557,509
Cash&Cash Eq. End of the period	€ 557,650	€ 534,930	€ 527,550	€ 538,556	€ 557,509	€ 571,067

Appendix 2: Balance Sheet and Cash-Flow Statement – Suzano Papel e Celulose

Balance Sheet	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Assets						
Non-Current Assets	€ 6,347,715	€ 6,596,190	€ 6,637,398	€ 6,578,994	€ 6,525,333	€ 6,477,889
Investments	€ 18,858	€ 18,858	€ 18,858	€ 18,858	€ 18,858	€ 18,858
Plant, Property and Equipment	€ 4,953,545	€ 5,202,020	€ 5,243,227	€ 5,184,824	€ 5,131,163	€ 5,083,719
Biological Assets	€ 1,038,055	€ 1,038,055	€ 1,038,055	€ 1,038,055	€ 1,038,055	€ 1,038,055
O. Fixed Assets	€ 337,257	€ 337,257	€ 337,257	€ 337,257	€ 337,257	€ 337,257
Current Assets	€ 1,986,704	€ 1,863,559	€ 1,986,693	€ 1,837,704	€ 1,790,388	€ 1,885,832
Inventories	€ 277,898	€ 352,023	€ 373,632	€ 343,992	€ 343,914	€ 350,621
Accounts Receivables	€ 452,536	€ 516,298	€ 577,400	€ 528,312	€ 514,397	€ 510,704
Cash and Cash Equivalents	€ 1,132,655	€ 871,624	€ 912,046	€ 841,785	€ 808,462	€ 900,892
O. Current Assets	€ 123,615	€ 123,615	€ 123,615	€ 123,615	€ 123,615	€ 123,615
Total Assets	€ 8,334,419	€ 8,459,749	€ 8,624,091	€ 8,416,698	€ 8,315,721	€ 8,363,721
Liabilities and Equity						
Non-Current Liabilities	€ 4,353,233	€ 4,455,496	€ 4,119,693	€ 3,867,180	€ 3,801,752	€ 3,462,120
Interest-bearing Liabilities	€ 3,643,405	€ 3,745,668	€ 3,409,866	€ 3,157,353	€ 3,091,925	€ 2,752,292
O. Long-term Liabilities	€ 709,827	€ 709,827	€ 709,827	€ 709,827	€ 709,827	€ 709,827
Current Liabilities	€ 700,347	€ 717,780	€ 1,052,773	€ 953,152	€ 742,941	€ 955,253
Accounts Payable	€ 269,087	€ 245,017	€ 245,017	€ 245,017	€ 245,017	€ 245,017
Interest-bearing Liabilities	€ 309,605	€ 297,737	€ 685,802	€ 602,513	€ 415,428	€ 639,633
Other ST Liabilities	€ 121,654	€ 175,025	€ 121,953	€ 105,622	€ 82,495	€ 70,603
Total Liabilities	€ 5,053,580	€ 5,173,275	€ 5,172,466	€ 4,820,333	€ 4,544,693	€ 4,417,373
Share Capital	€ 1,916,110	€ 1,916,110	€ 1,916,110	€ 1,916,110	€ 1,916,110	€ 1,916,110
Retained Earnings & Legal Reserves	€ 1,364,687	€ 1,252,352	€ 1,311,358	€ 1,423,437	€ 1,551,846	€ 1,703,382
Net Profit for the Period		€ 118,012	€ 224,157	€ 256,819	€ 303,072	€ 326,857
Total Equity	€ 3,280,797	€ 3,286,474	€ 3,451,625	€ 3,596,365	€ 3,771,028	€ 3,946,348
Total Equity + Liabilities	€ 8,334,377	€ 8,459,749	€ 8,624,091	€ 8,416,698	€ 8,315,720	€ 8,363,721

Statement of Cash Flows	2013	2014e	2015e	2016e	2017e	2018e
<i>All values in € '000</i>						
Operating Activities						
Net Income	-€ 77,286	€ 118,012	€ 224,157	€ 256,819	€ 303,072	€ 326,857
Depreciation & Amortization	€ 311,785	€ 329,435	€ 334,102	€ 333,881	€ 333,892	€ 334,224
Changes in non cash WC	€ 303,660	€ 161,958	€ 82,711	-€ 78,728	-€ 13,993	€ 3,014
Other non-cash adjustments	€ 83,435	€ -	€ -	€ -	€ -	€ -
Cash flows from operations	€ 621,594	€ 285,489	€ 475,548	€ 669,428	€ 650,956	€ 658,067
Investment Activities						
Capital Expenditures	€ 582,740	€ 577,909	€ 375,310	€ 275,477	€ 280,231	€ 286,780
Disposal and decrease in investments	€ 116,824	€ -	€ -	€ -	€ -	€ -
Additions in biological assets	-€ 208,655	€ -	€ -	€ -	€ -	€ -
Cash flows from investments	-€ 674,571	€ 577,909	€ 375,310	€ 275,477	€ 280,231	€ 286,780
Financing Activities						
Increase in LT Borrowings	€ 1,446,059	€ 400,000	€ 350,000	€ 350,000	€ 350,000	€ 300,000
Decrease in LT Borrowings	-€ 998,802	€ 297,737	€ 685,802	€ 602,513	€ 415,428	€ 639,633
ST Borrowings variation	€ -	€ 11,868	-€ 388,065	€ 83,290	€ 187,085	-€ 224,205
Dividends and Reserves	-€ 35,049	€ 59,006	€ 112,079	€ 128,409	€ 151,536	€ 163,428
Other financing activities	€ 20,900	€ -	€ -	€ -	€ -	€ -
Cash flows from financing	€ 433,108	-€ 31,389	€ 59,816	€ 464,212	€ 404,049	€ 278,856
Cash&Cash Equivalents Variation	€ 380,131	-€ 261,032	€ 40,423	-€ 70,261	-€ 33,323	€ 92,430
Cash&Cash Eq. Beginning of the period	€ 1,512,786	€ 1,132,655	€ 871,624	€ 912,046	€ 841,785	€ 808,462
Cash&Cash Eq. End of the period	€ 1,132,655	€ 871,624	€ 912,046	€ 841,785	€ 808,462	€ 900,892

Appendix 3: Coverage Ratio and Credit Ratings

Coverage	Rating	Default Spread
>12,5x	AAA	0.8%
9.5x - 12.5x	AA	1.3%
7.5x - 9.5x	A+	1.4%
6x - 7.5x	A	1.5%
4.5x - 6x	A-	1.7%
4x - 4.5x	BBB	2.5%
3.5x - 4x	BB+	3.2%
3x - 3.5x	BB	3.7%
2.5x - 3x	B+	4.5%
2x - 2.5x	B	5.7%
1.5x - 2x	B-	6.5%
1.25x - 1.5x	CCC	7.5%
0.8x - 1.25x	CC	10.0%
0.5x - 0.8x	C	12.0%
<0.65x	D	20.0%

Appendix 4: Beta Calculations

in €	Equity Beta	Mkt Cap (€ millions)	Net Debt	Effective Tx Rate	Unlevered Beta	D/E(market)	Unlevered Beta
KLABIN SA-PREF	0.8	3890.6	1223.1	24%	0.7	31%	
LEE & MAN PAPER MANUFACTURIN	0.8	2240.4	958.6	11%	0.6	43%	0.7
PORTUCEL SA	0.7	2528.1	307.0	25%	0.6	12%	0.6
GUANGDONG GUANHAO HIGH-TEC-A	0.9	1821.0	91.0	14%	0.9	5%	0.5
UPM-KYMMENE OYJ	1.3	6300.7	680.0	29%	1.2	11%	0.8
SAPPI LIMITED	0.9	1734.8	1636.2	25%	0.5	94%	1.5
KAPSTONE PAPER AND PACKAGING	1.5	2391.6	858.9	35%	1.2	36%	0.8
SHANDONG SUN PAPER INDUSTR-A	0.9	1160.4	834.1	30%	0.6	72%	1.7
HOLMEN AB-B SHARES	0.9	2052.5	669.1	18%	0.7	33%	0.8
Average	1.0	2680.0	806.5	24%	0.8	37%	0.6
Median	0.9	2240.4	834.1	25%	0.7	33%	0.9

in €	Equity Beta	Mkt Cap (€ millions)	Net Debt	Effective Tx Rate	Unlevered Beta	D/E(market)	Unlevered Beta
KLABIN SA-PREF	0.8	3890.6	1223.1	24%	0.7	31%	
LEE & MAN PAPER MANUFACTURIN	0.8	2240.4	958.6	11%	0.6	43%	0.7
SUZANO PAPEL E CELULOSE	0.7	3614.3	2820.4	25%	0.4	78%	0.6
GUANGDONG GUANHAO HIGH-TEC-A	0.9	1821.0	91.0	14%	0.9	5%	0.5
UPM-KYMMENE OYJ	1.3	6300.7	680.0	29%	1.2	11%	0.8
SAPPI LIMITED	0.9	1734.8	1636.2	25%	0.5	94%	1.5
KAPSTONE PAPER AND PACKAGING	1.5	2391.6	858.9	35%	1.2	36%	0.8
SHANDONG SUN PAPER INDUSTR-A	0.9	1160.4	834.1	30%	0.6	72%	1.7
HOLMEN AB-B SHARES	0.9	2052.5	669.1	18%	0.7	33%	0.8
Average	1.0	2800.7	1085.7	24%	0.7	45%	0.6
Median	0.9	2240.4	858.9	25%	0.7	36%	0.9

12. Bibliography

- Appelbaum, Steven H. Gandell, Joy Yortis, Harry Proper, Shay and Jobin, Francois (200), "Anatomy of a merger: behavior of organizational factors and processes throughout the pre-during- post-stages (part 1)", *Management Decision* 38:9, 649-662
- Arditti, FD (1973) "The weighted average cost of capital: some questions on its definition, interpretation, and use" *The journal of finance*
- Brav, A., Graham, J., Harvey, C. and Michaely, R. (2005), "Payout policy in the 21st century", *Journal of Financial Economics*, 77 483 – 527
- Bruner, R. (2004), "Where M&A Pays and Where It Strays: A Survey of the Research." *Journal of Applied Corporate Finance*, 16: 63–76
- Connor, Gregory and Korajczyk, Robert A. (1993), "The Arbitrage Pricing Theory and Multifactor Models of Asset Returns", *Finance Handbook*
- Cooper, I. and Nyborg, K. (2006), "The value of tax shields IS equal to the present value of tax shields", *Journal of Financial Economics* 81, Issue 1, 215–225
- Damodaran, Aswath (2008), "What is the risk free rate? A Search for the Basic Building Block", *Stern School of Business, New York University Publication*

Damodaran, Aswath (2013), "Equity Risk Premiums", Stern School of Business, New York University Publication

Delloite (2014), "M&A trends report 2014: A comprehensive look at the M&A market"

Doukas, John A. and Travlos, Nickolaos G. and Holmen, Martin (2001), "Corporate Diversification and Firm Performance: Evidence from Swedish Acquisitions"

Erel, Isil, Liao, Rose C. and Weisbach, Michael S. (2011), "Determinants of Cross-Border Mergers and Acquisitions"

Estrada, J. (2000), "The cost of equity in emerging markets: a downside risk approach", *Emerging Markets Q.*, pp. 19–30

Fama, E. F. and French, K. R. (1992), "The Cross-Section of Expected Stock Returns". *The Journal of Finance*, 47: 427–465

Fernandez, Pablo (2004), "Market Risk Premium: Required, Historical and Expected"

Fernandez, Pablo and Aguirreamalloa, Javier and Avendaño, Luis Corres (2013), "Market Risk Premium Used in 82 Countries in 2012: A Survey with 7,192 Answers"

Graham, John R. and Harvey, Campbell R. (2013), "The Equity Risk Premium in 2013"

Grant Thornton (2013), "The rise of the cross-border transactions", Grant Thornton International Business Report 2013

Hammod, Eduard (2014), "Encouraging signs that 2014 M&A spree is the real deal", *Financial Times*

Harvey, CR (1994), "Predictable risk and returns in emerging markets", *Rev. Financ. Stud.* 8 (3): 773-816

Huang, Peng and Officer, Micah S. and Powell, Ronan (2014), "The Choice of Method of Payment in Cross- Border and Domestic Mergers and Acquisitions", Asian Finance Association (AsianFA) 2014 Conference Paper

Kim, M. and Ritter, J. (1999), "Valuing IPOs", *Journal of Financial Economics*, 53, 3, 409 - 437

Koller, T., Goedhart, M. and Wessels, D. (2005), "Valuation: Measuring and Managing the Value of Companies", University Edition, 5th Edition

KPMG (1999), "Unlocking shareholder value: the keys to success", *Mergers & Acquisitions: A global research report*

Liu, J., Nissim, D. and Thomas, J. (2002), *Equity Valuation Using Multiples*. *Journal of Accounting Research*, 40: 135–172

Luehrman, T. (1997), "What's it worth? A general manager's guide to valuation", Harvard Business Review

Perry, Jeffery S. and Herd, Thomas J. (2004) "Reducing M&A risk through improved due diligence" *Strategy & Leadership* 32:2, 12-19

Rozeff, Michael S. (1990), "The Three-Phase Dividend Discount Model and the ROPE Model", *Journal of Portfolio Management*, pp. 36-42, Winter 1990

Sharpe, William F. (1964), "Capital asset prices: a theory of market equilibrium under conditions of risk", *The Journal of Finance* Volume 19: 425–442

Sirower, M. L. and Sahni, S. (2006), "Avoiding the "Synergy Trap": Practical Guidance on M&A Decisions for CEOs and Boards". *Journal of Applied Corporate Finance*, 18: 83–95

Young, M., Sullivan, P., Nokhasteh, A., & Holt, W. (1999). "All Roads Lead to Rome: An Integrated Approach to Valuation Models", Goldman Sachs Investment Research.

Other Sources:

Company websites

World Bank website