



**ALSTOM** **BOMBARDIER**  
• mobility by nature •



## **ALSTOM's Acquisition of Bombardier**

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## Abstract / Executive Summary

The scope of this thesis has been to value the synergies that Alstom could obtain of acquiring Bombardier's trains business and how they are valued, by using the academic framework of Aswath Damodaran. Furthermore, the academic framework of Christian Koziol is used to estimate fair standalone valuations of the companies incorporating the effect of default risk and bankruptcy costs, which for Bombardier is very significant. Bombardier has an estimated risk of default of 19% in 2018.

The biggest train manufacturer in the world CRRC are determined to begin to target global sales, imposing a relevant threat against Alstom's future profitability. In combination with a growing market Alstom could counter this threat and increase their value significantly with the acquisition of Bombardier. An assessment of the possible value from synergies in such an acquisition, given and the current opportunities threats Alstom are exposed to, is therefore assessed to be highly relevant.

The combined framework suggests that an overvaluation of the calculated synergies would be present when correcting the standalone valuations with default risk and bankruptcy costs. This is under the assumption that the default risk from Bombardier doesn't transfer to Alstom. If the calculated synergies are corrected for the value arising from a lower default risk, the value of synergies would hereafter seem to be more representative in relation to Alstom's own expectations to the value of future synergies. However, the value using the combined framework of Aswath Damodaran and Christian Koziol still seems to yield an optimistic result.

The research concludes a combined enterprise value with synergies of Alstom and Bombardier of 22,7b euros which more than doubles the enterprise value without synergies of 10b euros given the standalone valuations which assumes a risk of default of Bombardier of 19%. After decreasing the EV with synergies, with the increase in value from the lower default risk in the combined firm of 0,18% because of Alstom's high credit rating, the EV with synergies is calculated to 18,1b euros. This seems to be a more reliable estimate in practice as this estimate yields calculated synergies of 3b euros, which are in line with the Alstom's own expectations of the possible NPV of achievable synergies.

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## Introduction

The industry for train manufacturers are becoming increasing more consolidated and in order to face the increasing competition (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019), it is necessary to obtain an critical size of revenue and geographical presence. Alstom can obtain this by acquiring Bombardier. The industry is facing a growing demand for their services due to increasing concerns about climate changes and further political initiatives to shift more people to use public transportation and specifically train transportation to reduce emissions. The train manufacturers through their products and services proves to have the solution to this by offering innovative products such as hydrogen powered and electric powered trains.

The growing demand for the industry can be examined through the expected increases in passenger traffic from rail transportation (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019). The demand can further be examined by looking at the generally increasing economic conditions of the customers, which can be assumed to be reflected in the country's growth in real GDP. This growth is assumed to be representative as customers, which are rail service operators, often are state-owned entities hereby impacted by the governmental funding they received to carry out investments in rail infrastructure. COVID19 however, as it can be seen from the expected growth rates in real GDP for 2020 are having a significant impact on the economic conditions (Marketline, [www.marketline.com](http://www.marketline.com), 2020).

Bombardier given above circumstances and high risk of default therefore seem to be a good acquisition opportunity for Alstom. As Bombardier although having a high risk of default are delivering stable operational return from their core operations in relation to their trains business. Suggesting that Alstom can achieve significant improvements in their overall valuation creation as Bombardier also is operating with a higher operating margin, but assumingly the approximately are having the same risk profile, which all thing being equal should yield a higher EVA for Alstom when combining operations without even considering synergies.

## Research Question/Problem statement

The mobility market is booming and the outlook for train manufacturers is very positive (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019). In order to strengthen Alstom's global position in the market to respond to an increasing need for sustainable mobility; acquiring Bombardier Transportation is a possible solution. As it would increase Alstom's geographical presence and industrial footprint in growing markets, as well as significantly improving their innovative capabilities to lead smart and green innovation. Moreover, the industry has over the years become more consolidated increasing competition. Currently the market leading company CRCC (China Railway Construction Company), which is a Chinese state-owned train manufacturer, is currently the biggest in the industry with more than double the revenue of Alstom (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019). Beforehand 90% of their sales was generated in the domestic market, China, however they are determined to change this now beginning to target global sales. Following the acquisition of Bombardier, Alstom should be better suited for countering the increasing competition from China. However, what additional value will Bombardier Transportation add to Alstom? Bombardier has a track record of a negative equity balance over the years and in 2018 it was -4 billion USD, however, they seem to deliver stable operational returns from their train operations. In addition to this their credit rating of Caa2 suggest a default risk of around 19% as per Moody's (Moody's, 2020). Therefore, it would make sense to assess the value of possible operational and financial synergies Alstom could obtain by acquiring Bombardier, and hereby how these would help Alstom create value through synergies.

**What is the net present value of the synergies that would arise from Alstom's acquisition of Bombardier Transportation, as of 31/12/2018, and how does the default risk from Bombardier influence the value of these synergies?**

## Scientific Theory

Scientific theory is not essentially about being completely objective or unbiased. However, one needs to be open about how the level of objectivism and bias which can influence your conclusions. Following this train of thought, one major problem of single case studies is whether the researcher therefore is able to explicitly inform the reader about possible biases and limits regarding the conclusions of the case study.

One approach to determine one's own personal frame of references as a researcher can be found with Burrell and Morgan's framework for determining the view on reality of the researcher or reader (Morgan, 1979).

Their framework assumes that all theories of organizations are based upon philosophy of science and a theory of society. With this in mind they have constructed four paradigms which all have a different view on reality. A paradigm is a way of looking at something that represents an established standard and a set of related ideas.

The four paradigms are determined by two dimensions, first one is about subjectivism and objectivism and the second one is about whether the intention of the research is about understanding the examined object or if it's about changing the examined object. The four different paradigms are called radical humanist, radical structuralist, interpretive, and lastly functionalist.

In order to determine my view or in other words a paradigm as a researcher the first dimension which I will need to explore is the dimension about subjectivism and objectivism. If I see the world as objective one would be able to uncover more easily what reality is, because the perception of reality is assumed to be fairly similar across individuals. However, if I saw the world as subjective, the world would be much more complex, and demand an examination of the individual minds whom perceive reality in order to uncover more about reality. This case study follows a structure where firstly a strategic analysis is conducted followed by a financial analysis, to lastly a forecasting and valuation of the respective companies are conducted. Throughout the different analysis the world would mainly be seen as objective, because objective sources from professionals as well as methods have been used to reach conclusions. One fairly objective reality is therefore assumed to be present, as sources combined form the basis for the reality, the analysis and the conclusions. However, as the different sources have different views on reality in practice as individual minds naturally differ, there might be biases in the conclusions. One example for the case could be the forecast of revenue which are conducted based on three different factors historical revenue, passenger traffic and real growth in GDP. Data exists from three different sources but are combined to give one outlook on one common reality, however do the sources follow the same methodology when preparing the data and hereby perceive the reality the same? This has not been possible to determine and further examination of this

has not be included in the thesis, as it is not in the scope of this thesis. This therefore leads to the following conclusion; That the conclusions mainly are objective, however these conclusions are reached based on the average of opinions from different sources, which naturally determines reality differently, suggesting that complete objectivity aren't reached in this case study. Although I see the sources as objective and that one reality can be observed through the use of the sources, another researcher might not see the sources as objective depending on the purpose of the study. However, as the purpose in this thesis is to quantify and forecast one possible reality for case companies, one reality is assumed to be present in order to make connections between conclusions from sources and analysis throughout the paper. Nevertheless, the reader should be aware that the analysis and conclusions has been based on perceived objective sources and one reality that might not be completely objective. In addition to this some subjective judgment have been conducted by the researcher which are later presented in the section "Researchers judgment".

The second and last dimension which needs to be examined is about intention of the research whether It is to understand or change the examined object. The object in this sense is seen as the valuation of the synergies which consequently arises from the acquisition. The intention is to understand the computation of the object and how it arises through an objective reality. Thereby it is not the intention to identify factors that will influence or change the current acquisition price of Bombardier or calculated synergies. However, by understanding the acquisition price and synergies through an objective reality might uncover factors that would influence Bombardiers' acquisition price and calculated synergies. But then again, the intention is not on how the reality should be changed but how the value of the synergies can be calculated given a stable reality. Therefore, it is the reality seen as regulated and stable and not something that should be changed. This also seems as necessary in order to do the forecast and calculate future synergies through a subjective but stable reality. Where the truth can be uncovered through systematic studies of the subjective reality. This therefore seems to be appropriate that my personal frame of reference is the paradigm the functionalist, which is problem-oriented approach concerned to provide practical solutions to practical problems. The practical problem being the assessment of synergies and the solution is found in the framework on synergies from Damodaran (Damodaran, The Value of Synergy, October 2005). The solution also relies on

other approaches such as a strategic and financial analysis as well as standalone valuations. These methods are typically interconnected and are assuming that there is one objective reality and general conclusions can be therefore be drawn.

Following the same approach and sources one should be able to draw the same conclusions. As a textbook approach as well as Aswath Damodaran framework on synergies is adopted as the main methodologies which are replicate able. Therefore, are the conclusions seen as valid and reliable.

## Methodology

In order to describe the chosen research design, and the reliability and validity of the case study the framework provided by Robert K. Yin is adopted (Yin, 2018).

### Research design

Following Robert's argumentation, it can quickly be determined that a case study is a relevant research design choice, as the research question seek to explain a contemporary circumstance more than historical. Moreover, the research question is formulated with "how" Alstom's value of synergies is affected by the default risk of Bombardier, which as described by Robert, if the research questions contains "how" also indicates that a case study should be applied. As the research hereby addresses a descriptive question as explained by Robert. Another approach could be to do an experiment or survey; however, these methods aren't seemingly grasping all the details necessary for answering the research question. Therefore, the plan of doing a descriptive case study was adopted as this gives the researcher the necessary flexibility to answer the research question, as the case study gives some more flexibility in the use of theories, methods and sources.

Next step is to determine the design of the case study. It became apparent that a single case study design was needed as it revolves the possible synergies obtained by a single company in an acquisitions process. In addition, it was determined that a holistic approach was needed, as in-depth knowledge was required to both carry out the standalone as well as combined firm valuations.

### Design test criteria's

In the following section Robert four criteria's for judging the quality of the chosen research design is used to evaluate the reliability and validity of the case study. The four design

criteria are as follows the criteria for construction of validity, internal validity, external validity and reliability. The design test for internal validity is left out of this design test as it is only relevant for explanatory studies.

#### Construction of validity

The construction of validity is about identifying the correct operational measures for the concepts being studied. The validity of the case study can be increased by using multiple sources and a chain of evidence. Firstly, the identification of the operational measure is discussed. As the study revolves around the net present value created from the acquisition of Bombardier and the possible created synergies. The operational measure will be the forecasted net present value of the free cash to the firm (FCFF). The net present value of FCFF is calculated based on the weighted average cost of capital (WACC) of the firm and aggregated expectations to the growth in FCFF for the combined firm of Alstom and Bombardier. The methods used for calculating risk parameters in order to calculate WACC is following the methodology proposed by Aswath Damodaran (Damodaran, Estimating Risk Parameters, 1999). Moreover, WACC is adjusted with the framework provided by Koziol, because of a high default risk arising from Bombardier (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy, 2014). These methods seem highly reliable and documented, therefore implying that the calculation of WACC is valid. The second element of the net present value of FCFF is the expectations which goes into the estimation of the pro forma statements of the combined firm. These expectations are based on professionals estimate for future growth and prospects for the industry and the specific company, sources such as Frost & Sullivan and MarketLine are used. Moreover, the estimation of FCFF follows a textbook approach on how to estimate pro forma statements as described by Christian Petersen (Christian Petersen, 2017), which proposed the DCF model as the most accurate for estimating FCFF and hereby firm value and value of synergies. Therefore, the second element concerned with the forecasting of FCFF also can be considered to be valid. Summarizing the above it is possible to conclude that there is used multiple sources of evidence following each other in a chain of evidence because of the adaptation of a known framework for valuating companies. Where first a strategic analysis is carried out following a financial analysis, which lays the ground for the remainder analysis of forecasting and valuating the companies.

### External validity

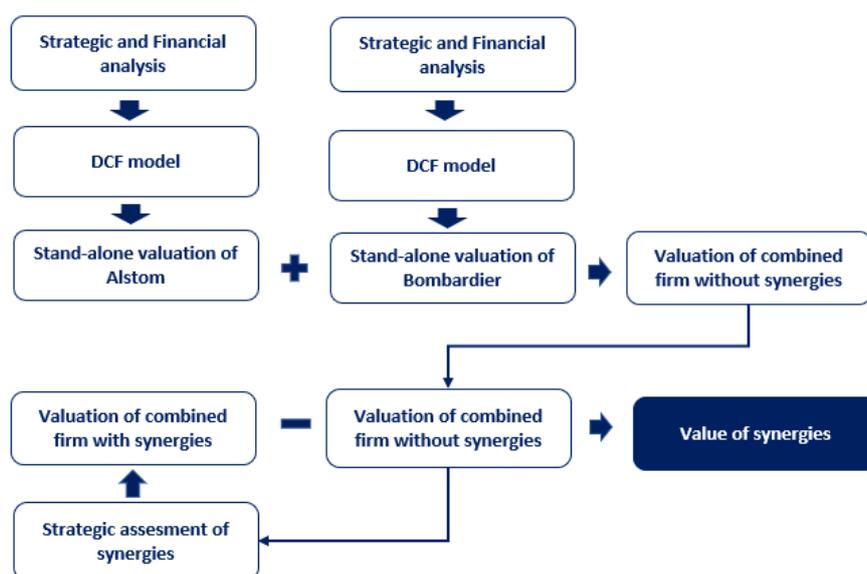
External validity shows whether or not the case study's findings can be generalized and if possible, how. External validity can be created with theory through single case studies and replication logic in multiple case studies. As the paper is considered to be a single case study, external validity must be created through theory. Following the same theory for valuing synergies by Aswath Damodaran (Damodaran, The Value of Synergy, October 2005). One should be able to replicate the same results given estimation of the same FCFF and WACC as the method then would yield the same results.

### Reliability

The last design test is about reliability and revolves around the data collection procedures and how these procedures can be repeated and thereby yield the same results. One can increase the reliability of the case study by using a case study protocol and by developing a case study database. The case study database can in this sense be seen as the appendices for this thesis, where comments and relevant figures are gathered in an overview - appendices are attached as a separate file. Moreover, the case study protocol can be found on page 27 in the appendix file.

### Theoretical framework and methods

There is in the above sections been referred to the use of several theoretical frameworks, which allegedly should increase reliability and validity of this case study. This is further presented in this section both in a broader overview, as well as more in detail.



(Source: Own contribution)

As seen from above figure a strategic analysis is carried out, this is done in order to ensure the validity and reliability of the subsequent financial analysis and forecasting (Sørensen, 2017). In the financial analysis the first step is to reformulate the statement of changes in equity. This is done in order to ensure that the income statements capture the change in equity and hereby that the financial statements articulate. In other words, the income statement needs to reflect the total comprehensive income for the period. The following forecast and valuation demand this reformulation (Sørensen, 2017). Hereafter the reformulation of the balance statement is conducted. Here it is common that the researcher will be missing information. Therefore, it is important that in those cases the researcher makes discretionary judgements about the classification of the assets and liabilities (Sørensen, 2017). After the reformulation of the balance sheet the income statement is reformulated in order to identify the sources of the firm's comprehensive income. Here the findings from the reformulation of the statement of changes in equity is applied in order to ensure that the income statement are showing a clean surplus, hereby including any negative or positive income posted directly on the equity. Furthermore, the income statement is divided in sections depending on whether the items are considering to be part of the core activity of the firm. This is done in order to identify the recurring net profits from the firms core continuing operational activities. It is important when valuing the firm that this is estimated in order to determine the future value creation of the firm (Sørensen, 2017). A prerequisite for this is to calculate core NOPAT. To do this it is necessary to perform a tax allocation in order to calculate the tax charge on core EBIT. The tax allocation is carried out following the framework presented by (Sørensen, 2017). After the reformulation of the statement of equity, balance sheet, and income statement it is possible to assess the value creation of the firms continuing core operational activities through financial ratios. To do this assessment the Du-Pont model is adopted. Furthermore, the financial ratios are concluded to be valid as they fulfill the alternative calculation of ROIC and ROE.

$$ROIC_{after\ tax} = NOPAT_{margin} \cdot Turnover\ ratio$$

$$ROE = ROIC_{after\ tax} + \frac{Spread \cdot NIBL}{Equity}$$

After conducting the financial analysis, it is now possible to prepare the proforma statements for the firm and hereby forecast the future expected cash flows from the firm. One critical component of the forecasting of proforma statement is to determine the forecast period. As described by (Sørensen, 2017) the period should begin with the current financial year and continue to the point where it doesn't add any value. This year is determined to be the year where the company has reached steady state, hereby growing with a constant growth rate. The period after the explicit forecasting period is called the terminal period and this condition can be reached if following below assumptions is met as per (Sørensen, 2017).

- 1) Growth in sales are decreasing to a constant long-term growth rate
- 2) The NOPAT margin is constant, hereby ensuring that the operating expenses are increasing with the same rate as the sales
- 3) The turnover ratio is constant, hereby ensuring that invested capital is growing with the same rate as the sales
- 4) The debt to equity ratio is constant, hereby ensuring that NIBL grows with the same rate as the sales

These assumptions are reached, and the budget period and calculation of the terminal period can therefore be assumed to be valid and reliable. The proforma statements are conducted based on the strategic value drivers, which as before mentioned is used in order to ensure validity and reliability of the proforma statements. The strategic value drives are set to be the expected growth in passenger traffic, real GDP growth and historic revenue growth. Furthermore, a top down approach is used in order to prepare the future projected statements as described by (Christian Petersen, 2017). The forecast framework for producing the proforma statements is adopted from (Christian Petersen, 2017) and involves a projection of the firms future, income statement, balance sheet, statement of changes in equity and cash flow statement. After the projected financial statements have been made, it is now the time to estimate the firms future projected cash flows. The choice of the valuation model can be done on the use of several arguments and be dependent on different scenarios. As a starting point the dividend model could be used as it is the simplest model with easy to access information. However, the level of dividends can often vary significantly as it is determined by the company's dividend policies and political

considerations from the firm's board (Sørensen, 2017). The DCF model is argued to be the most practical to use as it doesn't consider the financial part of the firm to be value creating and because this model allows for the valuation to be based on the value creation coming from the firm's operating activities (Sørensen, 2017). Therefore, the DCF model is adopted as the main valuation model. Additionally, the relative valuation approach is adopted in order to test the calculated enterprise value from the DCF model. Hereby determining whether the valuation is too optimistic or pessimistic in comparison to the market expectations. The relative valuation approach adds a deeper layer of validity and reliability to the estimated enterprise values as the reader can gain more insights whether the DCF valuation is pessimistic or optimistic based on the market's expectations. After the standalone valuations are carried out for both Alstom and Bombardier the WACC of the combined firm needs to be determined. The WACC of the individual firms are calculated based on (Damodaran, Estimating Risk Parameters, 1999). Following this framework ensures that results can be replicated and carried out by other researchers that seek to do so, increasing validity and reliability. In addition to this, the framework for adjusting WACC for default risk and bankruptcy cost is used mainly because it is necessary to adjust Bombardier's WACC due to the high risk of default, which aren't captured for a non-diversified investor. Using the framework from (Damodaran, Estimating Risk Parameters, 1999) aren't seemingly sufficient enough, why the framework from (Kozioł, A simple correction of the WACC discount rate for default risk and bankruptcy, 2014) is adopted.

The WACC of the combined firm is calculated using (Damodaran, The Value of Synergy, October 2005). The framework uses the unlevered beta of the two companies to calculate a weighted unlevered beta based on firm value. This unlevered beta is then relevered using the combined firm's expected capital structure. After this is done it is possible to calculate the combined firm's cost of equity. Hereby the following WACC of the combined firm can be calculated. After doing a strategic assessment of the expected synergies, the combined firm's proforma statements can be conducted and subsequently valued by the DCF model.

In practice this framework suggests that the value of synergies is calculated based on the combined firm value without synergies, which means that added value of the two standalone valuations, which subtracted with the value of the combined firm with synergies gives us the differences in value equal the value of synergies. Given that another researcher

sought to replicate the same results it would be possible given he followed the frameworks as described above.

### Researchers judgment

Although there is a theoretical framework which has been followed in this case study, hereby ensuring that results can be replicated and furthermore increasing validity and reliability of the results through the evidence behind the theories. The different frameworks in some instances in this process demand that the researcher makes some discretionary judgements and thereby influencing the objectivity of the calculated synergies. This also suggests that 100% objectivity isn't reached, as the valuation of the synergies also is impacted by the researcher's subjective judgment of these instances where judgment is needed. In chronological order these judgments are now examined and explained more in detail. In order to make future researchers which sought out to replicate the results of this research able to obtain the same results, would need to make the same judgements. Therefore, it is necessary to reveal where in this case study the results have been significantly impacted by the subjectivity of the researcher. In chronological order dependent on the structure of this case study the most significant subjective judgments have been examined and revealed to the reader.

Starting with the reformulation of the balance sheet, the deferred tax assets and liabilities are treated as being financial assets, however the framework also suggests that these could be classified as operational items as they can be assumed to be generated from the core activities of the firm. Additionally, another subjective judgment is done regarding the investments made in different companies, which couldn't be traced to be operational or finance related due to insufficient information. Here one could argue that these should be classified as operational as some investments are determined to be operational, however not full information is disclosed about the net income from these investments, hereby hindering the reformulation of the income statement which is later discussed in the financial analysis. Lastly the division of Bombardier's balance sheet based on percent revenue in the given year might not be the most accurate way of displaying the train divisions share of assets, liabilities and equity. However, the division is seen as representative after comparing it to Alstom's assets and further justification can be found in the financial analysis of this approach. Another researcher might conduct a more in-depth allocation analysis of how the

percent share of assets, liabilities and equity the train business has, by going further back in time looking at retained earnings for the train business. Hereby getting an accurate measure of the equity position of the train business. Thus, increasing or decreasing the estimated assets or liabilities of this case study's estimated balances for assets and liabilities. However, there seems to be a lot of factors influencing both approaches which questions the reliability and validity of this division. But based on the judgment made in the financial analysis the division seems to be representative and hereby reliable.

If a researcher followed the same framework and above subjective judgements the researcher whom sought out to replicate the same results should end up with the same reformulated balances. The reformulated balance is hereafter forecasted. The arguable most significant variable in the forecast is the revenue forecast. The revenue forecast is estimated using three different factors which was determined after an extensive analysis of the financial information of the firm and other macro-economic conditions. Alstom and Bombardier both discloses information about their revenue in the form of revenue per region and revenue per product segment, rolling stock, signaling, service and systems. First it was determined that a forecast of each revenue segment seemed the most appropriate in order to forecast the revenue the most accurately. However, after reviewing the available data on the outlook for the train manufactures industry from different sources, there didn't seemed to exist any data available to do the revenue forecast on product level. But it was determined that it was possible to do on regional level, assuming that all product categories were influenced by the one single factor, which was determined through Frost & Sullivan's outlook on the industry. This measure was the expected increase in passenger traffic for trains. It seems as a fair assumption that the different categories would be influenced by this measure. Still, this measure was very aggregated, as one region contains a lot of countries which the firms might not have any sales with, therefore the possibility of disaggregating the measure onto a country level was investigated. However, it was quickly discovered that this wasn't durable due to limited financial information, that didn't disclose sales on country level. Another element of the revenue forecast was also to incorporate the purchasing power of the company's customers, which after the industry analysis could be assumed to be the rail service operators which assumingly mainly are state-owned companies in most cases. Therefore, in order to incorporate the effect of the financial

situation of the possible customers of the companies a weighted estimate was used to estimate the revenue forecast by including the growth in real GDP for the different regions. The measure of real GDP is thereby used as an indicator for how likely the firm's customers were to engage with them by acquiring their services. Subsequently it was needed to add one last weighted measure to the revenue forecast in order to make two distinctive forecast rates for the companies. This measure was chosen to be the historical growth rate, as this should reflect the companies past ability to increase their revenue streams. Which seemed to be the best estimate for the future sales in growth and this estimate was also chosen based on the fact that the revenue forecast needed an extra measure in order to be different from each other, as the increases and decreases in both real GDP growth and passenger traffic was assumed to influenced them equally. However, in order to justify the use of the past historic revenue growth as an estimated future measure of growth, the measure was justified through the findings of the individual firms from the strategic and financial analysis.

Another researcher whom sought out to replicate these results should as described above come to the same conclusions regarding the use of the same weighted factors as done in this case study. Another approach could have been to forecast the order backlog on regional level instead and furthermore calculate an estimated conversion rate of the order backlog into revenue. However, this approach has not been followed since it seems like there is a lot of factors which could impact the objectivity of this conversion rate. From the current backlog in 2018, for both companies, they could achieve the same levels of revenue as in 2018, using up the whole value of their backlog in 3-4 years. This suggests that the increase in revenue for the following years from 2018 should be durable as they already have "won" the revenue and just need to be win a few percentages more in order to achieve the estimated revenue forecasts growth rates. These rates are justified more in detail in the financial analysis.

Lastly the strategic assessment of the possible synergies which could be obtain for the combined firm are based on some subjective estimates, which are based on both Alstom's expectations to future synergies as well as the researchers own insights. Theses insights are based on the findings from the strategic and financial analysis. Hereby this assessment is subjective and might therefore decrease the objectivity of the calculated synergies.

However, the value of the synergies is tested against Alstom's own expectations, hereby increasing the validity and reliability of the synergies assuming that Alstom's expectations are a reasonable objective source of information.

## Structure of the thesis

This section outlines the structure of the thesis. The first part of the analysis revolves around the strengths and weakness of Alstom and Bombardier. These are identified through the use of Porters Value Chain Analysis. Hereafter are the opportunities and threats are identified for the companies by applying the Porters Five Forces and PESTEL model. Following this analysis, the reformulation of Alstom's and Bombardiens financial statements are conducted and analyzed. Furthermore, the historic returns on invested capital are evaluated against the WACC for the respective company. Hereby is the historic profitability analyzed. Additionally, a growth analysis and analysis of reported earnings are carried out. Internal strengths, weaknesses, opportunities and threats identified through the financial and strategic analysis are lastly summarized in the SWOT model.

The SWOT and previous analysis hereafter lay the foundation for the following forecasting and valuation of the company's cash flows. The pro forma statements are hereby discounted using the before calculated WACC from the profitability analysis, and a standalone valuation is found for both Alstom and Bombardier. Additionally, a multiple valuation is carried out. This is done in order to compare the case study's valuation against a market valuation.

Lastly is the combined WACC calculated for the two firms and the FCFE is estimated for the combined firm given the expected synergies which could arise as part of the merger. Hereby, making it possible to calculate the expected synergies.

## Strategic analysis

The strategic analysis is divided into an internal- and external analysis. The internal analysis covers the firm's internal strengths and weakness, whereas the external analysis covers the firm's opportunities and threats.

### Internal analysis

The internal analysis consists of a Porters Value Chain analysis, which maps where in the value chain added value is created for the customer. Hereby it is evaluated what core

competencies the firm has and what competitive advantage they have, which makes them unique from the peers. Furthermore, the competitive advantages are evaluated if they are easily copied by competing companies or if they are sustainable (Sørensen, 2017). It has been possible to identify competitive advantages in the following parts of the value chain, the firm's infrastructure and technological resources.

#### Porters Value Chain Analysis - Alstom

Alstom has a widespread geographical presence which helps spread the risk of the company as well as allowing for several key benefits such as cost reduction through economies of scale. Moreover, this also allow for product development and manufacturing across regions, that finally results in a better ability to support and satisfy the customers (Marketline, Alstom SA - Financial and Strategic Analysis Review, 13 Jan 2020). Furthermore, the global presence gives Alstom the ability to serves a broad range of customers and markets, making them less dependent on a single market or customer (Marketline, Alstom SA - Financial and Strategic Analysis Review, 13 Jan 2020). This gives Alstom a sustainable competitive advantage, which relates to the firm's infrastructure, which is hard to copy from competing companies, as the before mentioned advantages have been built through years of operations and investments.

Alstom also benefits from a sustainable competitive advantage through their technological resources. This is due to their extensive product portfolio which in comparison to other key competitors are much more extensive (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019). The diverse and widespread product range helps Alstom with market penetration and enables them to acquire more markets shares than competing companies, as the widespread product portfolio enables them to serve and satisfy a broader range of customers. Moreover, Alstom has a strong focus on innovation through R&D to renew and extend the existing range of products in order to satisfy the needs of customers and passengers (Marketline, Alstom SA - Financial and Strategic Analysis Review, 13 Jan 2020).

#### Porters Value Chain Analysis - Bombardier

Bombardier also have a widespread geographical presence, due to their current firm infrastructure, which helps them mitigates any geography specific threats (Marketline, Bombardier Inc - Financial and Strategic Analysis Review, 2020). Again, this is seen as a sustainable competitive advantage in comparison to the general competition in the

industry. Lastly the firm's technological resources give Bombardier a competitive advantage as with Alstom, they have a very broad and diversified product portfolio in comparison to the general competition (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019).

#### Conclusion

Alstom and Bombardier both have sustainable competitive advantages through their firm infrastructure and technological resources when compared to the general competition in the industry. This enables them to mitigate any geographical specific risks and to benefit from economic of scales as well a broad range of products, which makes them able to satisfy existing and future customers. The advantages are sustainable as they are built through years of operations and investments in the market, which therefore is seen to be hard to copy.

#### External analysis

The external analysis consists of an industry analysis as well as an analysis of relevant macro-economic conditions, which is used to cover the firm's opportunities and threats.

#### Porters Five Forces

Porters Five Forces is used to evaluate the industry profitability and attractiveness. This is done by analyzing five different factors, customers and suppliers bargaining power, threat of new entrants and threat of substituting products as well as the existing competition in the industry. Lastly it is evaluated what is the most profitable and attractive generic strategy to follow (Sørensen, 2017).

The analysis will be based on Marketline's Global industry profile for Global Passenger Rail from August 2019. The industry revolves around the rail service operators as being the competing companies in the industry, whereas Alstom and Bombardier are the suppliers delivering the trains and other relevant services and supplies. Buyers are defined as typically being the individual passenger (Marketline, Global Passenger Rail, August 2019).

Customers bargaining power is assessed to be weak as the customers often doesn't have a choice to switch from one operator to another hereby reducing the bargaining power.

Moreover, it seems virtually impossible for the buyers to do backward or forward integration, furthermore, reducing the bargaining power (Marketline, Global Passenger Rail, August 2019).

Supplier power is assessed to be strong since key inputs to the industry are provided by a small number of large organizations. The key inputs provided to the sector consist of rolling stock and railway engineering products and services. Forward integration for the suppliers, such as train manufacturers, is very difficult as there is a high cost of infrastructure development and regulation in the countries, this hereby doesn't offer them any possibility to increase their bargaining power further. However, liberalization of the global industry, trains safety standards and country specific requirements can help them increase their bargaining power further (Marketline, Global Passenger Rail, August 2019).

Threat of new entrants is overall assessed to be weak, however varies considerably from country to country based on the liberalization of the country specific market. The threat of new entrants is overall weak as an entry into the industry, in general, requires a high capital outlay regarding construction of own rail infrastructure, which also can be legally difficult, as well as high costs to rolling stock. In countries such as France the sector is getting very liberalized as the sector will be opened in 2024 for newcomers, threatening the current monopolistic operator of rail passenger services SNCF. However, this will create opportunities for other train manufacturers. (Marketline, Global Passenger Rail, August 2019).

The threat of substitutes is generally assessed as being strong, however it will vary significantly based on country and personal circumstances of the respective buyers. The threat is generally strong as there exist many alternatives such as cars, buses, ferries or domestic and long-distance flights. The cost-benefit trade-offs vary as personal circumstances of the buyer and the conditions given the geographical location come into play. As an example, in US, private cars are seen more practical and flexible as opposed to rail transport, but it can be more costly. Buses can be the cheap alternative but might not offer the same speed and efficiency over longer distances. Lastly, air travel in Europe, US and Japan can if competitively priced be a better alternative for longer distances, which also can be seen in how they have increased in traffic volume in the recent years (Marketline, Global Passenger Rail, August 2019).

The degree of rivalry is overall assessed to be moderate but will again be dependent on the country specific regulations. In general, it is common for rail routes to be monopolized by a single state-owned company, so the company owns both the infrastructure and the trains,

which lowers the rivalry. However, in cases where the company doesn't own the infrastructure but owns the train, there will be high fixed exit costs which can boost rivalry further if the market is liberalized. Therefore, is the overall rivalry seen as being moderate (Marketline, Global Passenger Rail, August 2019).

### Conclusion

The industry profitability and attractiveness are dependent on where in the industry you are positioned. If the rail service operators are state owned and have the rights to all the infrastructure, they have a significantly advantage and doesn't have to worry about differentiating themselves from the competition or to adjust their targeting group accordingly. Alternatively, if the sector is liberalized and the company competes with multiple rail service operators it is considered necessary to adopt either of the two following generic strategies dependent on the country and buyer preferences. If the country and its buyers value safety and have a lot of local requirements a differentiating leader strategy is recommended as the most profitable and attractive. However, if the country and its buyers are more concerned about low transportation costs the cost leader strategy is recommended. Both strategies most important element for success is a large targeting group, as scale and size are vital in this industry in order to be profitable.

When looking at the suppliers it seems fair to assume that the same conclusions relating to generic strategies can be drawn. Because the rail service operators, products and services are highly dependent on the supplier's ability, such as Alstom and Bombardier, to differentiate or deliver low cost products/services. General it can therefore be concluded that Alstom and Bombardier should focus on a differentiating leader strategy as a large targeting group is essential, but also because differentiating seems important in order to get a large targeting group, as this assumingly will enable the company to service a broader range of customers due to differentiated products that would be able to live up to more safety and country specific standards.

# Porter's Five Forces

## Threat of New Entrants (Weak)

- Requires a high capital outlay to rail infrastructure and can also be legally difficult to enter the industry
- A liberalization of the industry can create opportunities for train manufacturers, increasing threat of entrants



## The Degree of rivalry (Moderate)

- Dependent on the country specific regulations it can vary significantly as the liberalization of the market varies across countries. Some countries don't allow other rail service operators than state owned once.



## Threat of substitutes (Strong)

- Many alternatives to transport such as cars, buses, ferries, or flights, which increases threat of substitutes.

## Suppliers bargaining power (Strong)

- Key inputs are provided by a small number of large organizations
- Liberalization of the market, trains safety standards and country specific requirements can help increase the train manufacturers bargaining power further.



## Customers bargaining power (weak)

- No possibility for the customer to forward or backward integrate.
- Choices are often limited as one rail service operator typically owns all the routes weakening the customers bargaining power.



## PESTEL

The PESTEL analysis is used to cover relevant macro-economic conditions that influence the firm's future profitability. This is done by looking at the political, economic, social, technology, environmental and legal conditions (Kotler, 2016).

Alstom and Bombardier's revenue streams can be divided into four regions, Europe, Americas, Asia and Pacific and Middle East & Africa. Therefore, attention is directed towards these regions in the PESTEL analysis. Furthermore, it is noticed that approximately 50% of Alstom revenue is generated from Europe and the remaining regions Americas and Asia and Pacific accounts for approximately 20% each and Middle East & Africa for the last 10% (Alstom, Consolidated Financial Statements 2019, 2019).

### Political

Currently there is two major political initiatives which are influencing the global rail market. One is the Eurasian organization which plans to link 28 EU countries with 5 Asian nations in order to better facilitate trade relations. This will increase the needs for trains and rail infrastructure, which will have a positive influence on market in the future. Moreover, there is the decarbonization initiative in Europe which is led by a task force with participants from the rail industry with the aim to remove all diesel-powered vehicles and replace them with rail vehicles using alternative powertrains. This initiative will demand the train industry to focus more on their R&D activities in order to provide the sustainable solutions, that the market will demand now and in the near future. Lastly, there is the Shift2Rail (European organization), which has a budget to invest 920 million euros (2014-2020) in efforts to increase demand for passenger rail services over private vehicle ownership. All these initiatives will have a positive effect on market outlook for the rail industry (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019).

### Economical

The future economic growth in Europe might be dampen by protest and civil unrest that can hamper the financial markets in the region. These concerns are generated based on the chaos over Brexit and because of the protests in the wake of major changes to the pension system (Dec 2019) planned by the government in France. Moreover, Italy has run into conflict with the EU due to its expansionary fiscal policy and huge stock of public debt that increases the risk of substantial refinancing that could lead to sudden rises in sovereign

yields. Lastly, the US and EU trade deal negotiations from May 2019, which is still ongoing, can also have a great influence on the future economic situation of Europe, as there is expected to be some major contradictions of the terms between the two parties (Marketline, Global Risk Report Q4 2019 (Quarterly update), 31 Jan 2020). However, COVID19 still seems to be the major influential factor the future growth in all regions. Looking at Marketline's projections for real GDP growth across regions it can be concluded that the average real GDP growth rate is expected to decrease with around 2% looking solely on 2020. Nevertheless, the long-term growth rate over a 5-year period (2019-2023) is still positive and projected to be around 1,5% (Marketline, [www.marketline.com](http://www.marketline.com), 2020). When we look into some of the specific countries within the different regions it is noticed that China is set to develop their high-speed rail infrastructure and rolling stock network to 30,000 km by 2020 with around 10,000 km of them pending completion. The rolling stock will be provided by the domestic company CRRC, however digital technology providers and construction equipment suppliers can benefit from having a presence in the country. In Asia, Africa and LATAM they have a big demand for shifting to more emission efficient trains and they will have an ongoing switch from diesels powered trains to electric powered trains. India has already set up a public private partnership with Alstom for realizing its plan for more electrified passenger railways. In United states as well as other parts of Africa and LATAM that have dilapidated rail network that are impractical to electrify. Therefore, there will be a need in the future for diesel trains or the more emission friendly hydrogen trains for these routes, as some routes will remain impractical to electrify (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019).

#### Technological

As mentioned with the decarbonization initiative set by EU, the train manufacturers are encouraged to innovate and develop sustainable powertrains for their trains in order to meet future market needs. Hydrogen-powered rail vehicles is expected to be one important step towards this decarbonization, as emissions are low when the trains are in service and can be a sustainable solution for routes where electrification of the rails aren't possible (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019). Moreover, there is seen a high digitalization in the service segment for the rail industry. This is due to the development in telematics, internet of things and highly civilized sensor technology. The Integration of these technologies can help the train manufacturers to improve the customer experience. The

technological advancements will boost current rolling stock sales and aftermarket services for retrofitting the existing fleet (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019).

#### Social

The social risk across regions vary and are therefore influenced by different factors. In Europe there is increasing social risk due to declining fertility rates. In Americas, Africa and Middle East unemployment is increasing, whereas in Asia and Pacific poor governance are the influential factor, that is increasing the social risk (Marketline, Global Risk Report Q4 2019 (Quarterly update), 31 Jan 2020). The social risk is therefore from this point of view having a negative effect on the outlook for the train market. However, the traffic volume for passenger traffic is generally expected to grow across all regions with 1,1% CAGR from 2017-2025. Indicating we will begin to see a switch in how passengers in the future will be transported more by trains in relation to other alternative transportation forms, such as personal vehicles, busses and air travel.

#### Environment

There are currently increasing concerns over climate changes across all regions in general. These concerns have further intensified due to the loss of glaciers in Iceland in August 2019, the Amazon fire in September 2019 and Australian wildfires in January 2020. This has also led to 77 countries and 100+ cities to pledged to reduce emissions to zero by 2050 at the UN Climate Action Summit held in New York 2019 (Marketline, Global Risk Report Q4 2019 (Quarterly update), 31 Jan 2020). Specifically, in Asia and Pacific the most pressing environmental issues comes from poor air quality and frequent floods. These problems are especially apparent in Asian countries with a high population density. In Europe air pollution along with risk of major loss of biodiversity are the pressing issues. Generally, the climate concerns and before mentioned events are expected to be a positive influential factor for the global rail industry, as rail transportation is much more sustainable compared to many other alternative transportation forms. Why investment in this sector could be a solution to reduce emissions (Marketline, Global Risk Report Q4 2019 (Quarterly update), 31 Jan 2020). It became especially apparent when looking at emissions from passenger vehicles in US, which accounts for around 60% of the total transportation CO2 emissions 2006-2016, in comparison rail vehicles only accounts for 2,5%. It is also noticed that air transportation accounts for around 10%. This pattern in CO2 emissions are applicable across all regions,

further strengthen the argument for looking at the rail industry for the solution in regard to reducing emissions (Sullivan, Global Rail Outlook, 2019, 8 Jul 2019).

#### Legal risk

The legal risk in Americas due to especially LATAM countries are resulting in high legal risk for this region. This is due to weak business laws and legal atmosphere. In Europe legal risk is low, however some legal risk may occur in some countries such as Italy because of weak collateral and bankruptcy laws. In Asia and Pacific poor regulations and judiciary plague are increasing the legal risk. In Middle East and Africa, the lack of legal right and business regulations are increasing legal risk. Generally legal risk seems to be very dependent on the specific countries in mention and it can be hard to track the exact influence these have on the train manufacturers in practice. Therefore, is the legal risk noticed as an important element that can influence the future profitability of the train manufactures, however it is hard to account for in practice (Marketline, Global Risk Report Q4 2019 (Quarterly update), 31 Jan 2020).

#### Conclusion

The PESTEL analysis have covered different macro-economic factors influencing Alstom's and Bombardier's future profitability. There are several political conditions which positively are influencing the future profitability of the firms. The Eurasian organization, the EU decarbonization initiative and Shift2Rail organization, which all are positively influencing the firm's future profitability. The economic conditions are the most impacted by COVID19, which are seen as the main influencer for the negative growth prospect in 2020, however in the long run the prospects are positive. The PESTEL analysis can be summarized in the following table on the next page.

# PESTEL

## Political

### Positive factors

- Eurasian organization
- EU decarbonization initiative
- Shitf2rail organization

## Economical

### Positive factors

- Positive long-term growth is expected looking across all regions for the next 5 years

### Negative factors

- Brexit
- France pension plans
- Italy's increasing debt
- US and EU trade agreement
- COVID19

## Social

### Positive factors

- Passenger traffic is expected to grow with 1,1% CAGR from 2017-2025

### Negative factors

- Declining fertility rates in Europe
- Increasing unemployment in Americas, Middle-East and Africa
- Asia & Pacific are influenced by poor governance

## Environment

### Positive factors

- Increasing climate concerns
- Trains proves to be a low emission alternative for transportation and is polluting significantly less than cars and other transportation alternatives. Hereby increasing the interest for using trains as a solution to dampen the CO2 emissions.

## Technological

### Positive factors

- Hydrogen powered trains that can help minimize emissions
- Digital solutions that can increase convenience for passengers and increase demand for retrofitting existing fleet in the near future.

## Legal

### Positive factors

- General low legal risk in main region Europe. (based on revenue)

### Negative factors

- High legal risk in some LATAM, Africa, Middle East and Asian & Pacific countries.

## Financial Analysis

The financial analysis has the purpose to give the reader an overview on how Alstom and Bombardier's ability are to create added value for the owners. It adds a financial perspective and complement the strategic analysis, by addressing the financial numbers and profitability. Together they provide the starting point for the budgeting and lastly the valuation. First off will the financial statements be reformulated and hereafter analyzed.

### Reformulating the financial statements

In order to measure the firm's profitability, it is necessary to separate the firm's activities into operating and financing activities. This is done in order to measure the firm's profitability solely on its operating activities, as these are the once that contains the company's competitive advantages. Moreover, these are the activities that are hard to copy from the competing companies, whereas the financing activities are more easily copied by the peers. Alstom and Bombardier aren't obligated by accounting standards such as GAAP or IFRS to separate items in relation to whether they relate to operating or financing activities. Therefore, it is needed to do this separation before analyzing in order to be able to analyze the primary force of value creation, which stems from the operating activities (Christian Petersen, 2017).

With the aim of separating the firm's activities into operating and financing activities it is first and foremost important to define what the operating activities of respectively Alstom and Bombardier is. For Alstom it is activities relating to their core revenue generating activities which includes the production trains and distribution as well as maintenance of rail equipment. Their revenue streams can be divided into the following segments, rolling stock, systems, signaling and services. For Bombardier core activities can also be divided into segments such as rolling stock, systems and signaling. Moreover, Bombardier's core revenue streams also arise in the form of revenue streams for their aircraft business, so manufacturing of airliners, business jets etc.. However, as it is only Bombardier's train operations Alstom seek to acquire these activities are therefore solely seen as operating and the aircraft business is disregarded. This also means that after the reformulating only cares about the operating activities relating to rolling stock, systems and signaling, which will be

analyzed for Bombardier. Everything else for both companies that aren't relating to the core activity as mentioned before and are considered as financing activity.

### Balance sheet

Goodwill in Alstom is only calculated on a group level and it is therefore not possible to trace goodwill to individual subsidiaries. It is assumed that the goodwill is mainly related to subsidiaries that are regarding the firm's core activities and goodwill is therefore seen as an operating asset. Bombardier's goodwill is mainly related to DaimlerChrysler Rail Systems GmbH acquisition in May 2001. As the acquired company relates to the core activities of the firm, goodwill in Bombardier is also seen as an operating asset.

Intangible assets in Alstom include intellectual property such as technology and licensing agreements, as well as internally generated intangible assets such as development costs. These assets are assumed to relate directly to the core activity of the company. In Bombardier not much is disclosed in the notes about what intangible assets consist of, however it is mentioned that intangible assets among other items include transportation platform development cost. Therefore, it is assumed that intangible assets in Bombardier also can be characterized as an operating asset as it seems like intangible assets stems from the operating activity.

Property, plant and equipment (PP&E) in Alstom contain assets relating to land, buildings, machinery and equipment, constructions in progress, tool, furniture, fixtures and other. Generally, it is assumed that these assets relate mostly to the core activity of the company. The same characterization of PP&E is present for Bombardier and it is therefore assumed that PP&E also here can be seen as an operating asset.

Investments in joint-venture and associates, In Alstom, are considered a financial asset as the notes aren't sufficiently informative across the analyzed period (2014-2018) to separate into operating and financial activities. The investments in joint-ventures and associates was highest in 2016 and 2017 due to the investment in the Energy Alliances that accounted for approximately 85% of the total both years. This investment is considered to be financial as it isn't related to the core activity of Alstom. The Energy Alliances is operating within renewable energy, hydro and offshore, as well as Nuclear energy. The investment in Breakers Investment B.V. (later TMH limited) is considered to be part of the core activity as

their operations relates to railway equipment manufacturing. However, due to the limited information regarding the remainder investments in joint ventures and associated companies, these investments as a whole are seen as relating to the financing activities. This is further justified by the fact that the net profit from investments in joint-venture and associates are reported as a lump sum in the income statement as share of net income of equity accounted investments, so it wouldn't be possible to separate each investments contribution to the company and hereby does this concludes that there isn't a possibility to classify the assets individual as being relating to the operations or financial activities. However, in general it seems like the balance of Investments in joint-venture and associates relates to financing activities and is therefore seems fair to classify as financial assets. In Bombardier there aren't enough information disclosed in the notes either relating to investments in joint-venture and associates and it hasn't therefore been possible to make a clear distinction on whether or not the assets relates to the operating activity or financing activity of the company. It is assumed that the investments therefore relate to the financing activity of the company.

Alstom doesn't have a significant influence over the none consolidated investments, however, has the intention and ability to hold these investments in the long term. There aren't disclosed much information about the operations of these investments, but as we can see in the annual rapport in 2015 many of these assets were transferred to assets held for sale as they were regarding Alstom energy business. Therefore, are nonconsolidated investments seen as a financial asset, as they seem to be relating to none operating activities. In Bombardier there doesn't exists any none consolidated investments and this item is therefore disregarded in this section.

Other non-current assets in Alstom are related to the long-term rental of trains and associated equipment to a London metro operator. These assets are relating to the core activity and is therefore seen as an operating asset. In Bombardier other non-current assets mainly relates to prepaid expenses and it is therefore fair to assume that these are relating to the core activity of the firm and be can be seen as an operating asset. Other current assets in both Alstom and Bombardier relates mainly to prepaid expenses, which are assumed to be related to core activity of firm and is therefore regarded as operating assets.

It hasn't been possible to divide the corporate taxation into tax on operations and tax on financing due to limited information, this creates problems regarding the classification of deferred taxes. One argument for classifying deferred taxes as operating could be the assumption that the deferred taxes mainly arises as part of operating activities and it doesn't share the same characteristics as financial items that do carry interest. (Stewart, 1991) suggest treating deferred tax liabilities as quasi equity. Because deferred tax liabilities don't represent outflow of economic benefits, and because deferred tax assets are just a sum of temporary differences between tax and book value. In the budgeting of Alstom's future Net Working Capital it will be more appropriate to consider deferred taxes as being part of financing activities, as treating the deferred taxes as operating assets and deferred tax liabilities as operating liabilities would be misrepresentative for the NWC measure. This is since deferred taxes are uncertain regarding timing and/or amount used in settlement and thereby it is hard to consider whether it will have influence on the cash flows for the company (Christian Petersen, 2017). Deferred taxes are therefore assumed to be relating to the financing activity of the company for both Alstom and Bombardier, due to the later calculation of NWC, which are used in the forecasting of the pro forma statements.

Alstom's Inventories includes cost related to direct material, and where applicable direct labour costs and those overheads that have incurred in bringing the inventories to their existing location and condition. This asset relates to the core activity of the firm and is therefore seen as an operating asset. In Bombardier inventories relates to rolling stock and it is therefore seen as operating assets.

Contract assets in Alstom relates to the unbilled part of revenues recognized to date relating to long term construction and service agreements. Or in other words this can also be considered accrued revenue. This relates to the core activity of the firm and is therefore seen as an operating asset. In Bombardier contract assets are treated in the same way and can therefore also been seen as an operating asset.

Trade receivables in both Alstom and Bombardier is assumed to be mainly generated from the core activity of the firm and is therefore seen as an operating asset. Other current operating assets is assumed to be generated from the core activity of the firm and is therefore seen as an operating asset.

Other current and non-current financial asset in Alstom consists of the positive market value of derivatives instruments hedging loans, deposits and group cash pooling positions. This relates to financing and aren't operating in nature and is therefore seen as a financial asset. The same description of financial assets is applicable in Bombardier and these assets is therefore also seen as financial assets.

Cash and cash equivalents in Alstom and Bombardier are held to meet short-term cash commitments, and in order to be considered as cash equivalent, an investment must be convertible to a known amount of cash within the coming three months. From 2015 and onwards Alstom and Bombardier have separated cash and cash equivalents, so it is possible to determine what is invested in Euro money market funds and bank term deposits. The part of cash and cash equivalents that are in an open bank deposits are considered to be operating cash, which is part of the core activity, whereas the remainder cash invested in market funds are considered to be financial assets as it is seen as excess cash.

Assets held for sale is seen part of discontinuing operations and is therefore not part of the continuing core activity and is regarded as a financial asset, which is true for both Alstom and Bombardier.

Non and current provisions is relating to warranties, risk on contracts, restructuring and tax risk litigation. These liabilities are uncertain of timing and amount. These are seen as generally being generated from the firm's core activity for both Alstom and Bombardier and is therefore identified as operating liabilities.

Accrued pensions and other employee benefits can be broken down into post employment defined benefit plans, post-employment defined contribution plans and other long-term employee benefits for Alstom and Bombardier. The firm is liable for the future pension payments of the earned rights for the employees and since recognised pension liabilities are interest bearing it seems reasonable to treat them as financial liabilities.

Current and non-current borrowings as well as current and non-current obligations under finance leases are considered financial liabilities as they are interest bearing for both Alstom and Bombardier.

Contract liabilities can be seen as billings to customers relating to long term construction and service agreements, which haven't been recognised as revenue to date. Or in other words, this can also be seen as deferred revenue. This is true for both Alstom and Bombardier. Why this can be seen as relating to the core activity of the firm and therefore can be seen as an operating liability.

Trade payables for Alstom and Bombardier is assumed to be generated in relation to the core activity of the firm and is therefore seen as operating liability.

Other current liabilities relate mainly to staff and associated liabilities, other payables and derivatives relating to operating activities. Limited information makes it difficult to assess precisely what the liabilities consist of, but it seems that it is fair to assume that the liabilities relates to core operating activity for both Alstom and Bombardier.

Liabilities related to assets held for sale is assumed to not be part of the continuing core activity and is therefore seen as a financial asset for both Alstom and Bombardier

After above corrections have been done to the reported balance for Alstom and Bombardier the analytical balance sheet can be divided into operating assets, operating liabilities, financial assets, financial liabilities and lastly equity. Balance sheets as reported can be seen in the appendix file. Analytical balance sheets for Alstom and Bombardier can also be found in the appendix file

#### Division of Bombardiers balance

As mentioned before Bombardier has activities with producing aircrafts and trains, however it is only the train business which Alstom seeks to acquire. Therefore, it is necessary to divided Bombardier's balance sheet into two parts, one relating to the aircraft business and a part relating to the train business.

In order to divide Bombardiers balance sheet into two parts it is necessary to measure how much value each business has in assets, liabilities and equity. However, as there isn't enough information in the financial notes to make such as detailed division another approach needs to be taken. Following proposition is formulated; Revenue is a measure of activity and value for each business segments. This proposition is assumed to be reasonable. However, as Bombardiers aircraft business have huge negative EBIT results for the period 2014-2018 it seems that the business is decreasing quickly in value in comparison to the

train business, which have positive results for the period. Looking at 2011-2018 the total revenue for Bombardier has been approximately equally divided between the aircraft and train business. Also, EBIT has been on fairly the same levels in the period which comes before the analyzed period 2011-2014, however as mentioned before that changed in 2014.

After these observations have been conducted it quickly became apparent that an 100% accurate division of Bombardiers balance weren't possible. However, some obvious corrections to the total balance could be done where assets and liabilities were explicitly determined to be relating to either of the segments.

This was true for following items relating to the aircraft business:

Non-current asset → Aerospace program tooling

Current liabilities → Advances on aerospace programs

Non-current liabilities → Advances on aerospace programs

Above items was also explicitly stated on balance sheet and therefore easy to adjust for. The remaining items of the balance sheets was determined to be based on % revenue approach. Therefore, based on how many percent Bombardiers train business comprises of the total revenue for Bombardier the given year, would be the percentage value of which the train business take up in assets, liabilities and equity the respective year.

The value of equity for the train business is hereafter corrected for the lost equity due to the manual correction of aerospace program tolling and advances on aerospace programs. The correction is simply calculated as the difference between assets and liabilities. As the assets for aerospace program tooling exceeds the liabilities, the equity correction is negative for all of the years 2014-2018 and the correction has a significant effect.

As the train business is more profitable, measured on EBIT than the aircraft business, we should expect that equity would be higher for the train business in the analyzed period 2014-2018. However, following the correction with the aerospace assets and liabilities the equity seems to lay on approximately the same levels through the period 2014-2018 as the total of the aircraft and train business combined equity. This intuitively suggest that the balance isn't representing the value of the train's business assets and liabilities accurately, as the equity for the period seems to be way too negative. However, the argumentation for

why the balance's assets should be representative is because of fact that the negative equity has risen due to negative net results and thereby negative retained earnings, which has demanded the company to take upon more debt to finance current and future operations. This is due to the negative performance of the aircraft business. However, this must also be expected to affect the trains business levels of debt.

The overall division of the balance seems to be deflated regarding the assets and inflated regarding the liabilities as the train business have negative equity almost equal to the total balance of Bombardier. This could be true suggesting that the train business has fewer assets than liabilities, and that although the aircraft business have huge negative results have more assets than liabilities. When comparing the balance to Alstom's balance sheet in 2018, their total assets was 9,9 billion euros, exclusive cash and assets held for sale, whereas the balance for Bombardier was 9,4 billion USD (with the same exclusion). This suggest that the assets somewhat seem to be representative. This is also seeming as a fair comparison as the two companies approximately are generating the same amount of revenue each year, in 2018 Alstom generated 8,2 billion euros in revenue whereas Bombardier achieved 8,9 billion USD. Hereafter looking at the total liabilities, Alstom amounts to 9,2 billion euors whereas Bombardier amounts to 15,9 billion USD, the difference suggest that the liabilities are inflated. However, there seems to be natural explanation to this inflation, which arises from the huge negative results from the aircraft business. It seems fair to assume that these results also would have affected the train business financial activities as the companies are connected and thereby should the division of train business balance also reflect this. This is hereby reflected through a negative equity position, as well as a high debt to equity ratio. Therefore, it is possible to conclude that the assets, liabilities and equity of Bombardier transportation seems representative. However, one might have reduced the liability levels and hereby increase the equity level for the train business as it seems like the negative equity is mainly created from the aircraft business. But it seems that in order to do this accurately would have demanded an extensive correction of the equity in past, as well as more information disclosed in the notes about the division of assets, liabilities and equity between the aircraft and train business. Because information about this is limited or not available and the time expected to be used on this exercise is

assumed to be significant, it is seen as being out of the scope of this thesis to determine an 100% accurate balance of Bombardier transportation.

#### Income statement

Sales in Alstom consist of revenue streams from rolling stock, services, systems and signalling. These activities are therefore generated from the core activities. For Bombardier sales in additions to rolling stock, services, systems and signaling also consist of revenue streams from their aircraft business. Bombardier has however disclosed information on how much each business comprises of the total revenue. Hereby it has been possible to only examine the train business revenue and operating expenses. Both company sales from their train operations are considered to be relating to the core activity of the firm and no corrections are made to the reported revenue streams. Reported income statements can be seen in the appendix file.

Operating expenses in both Alstom and Bombardier, is assumed to be related to the sales and therefore is also related to the core activities and areas before mentioned. Therefore, no corrections are made in this regard. When looking more closely at the what operating expenses consist, it is noticed that selling and administrative expenses include expenditures to, market, strategy sales and business development and communication as well as cost to finance, human resources, legal and information systems. These costs are assumed to be part of the core activity of the firm for both Alstom and Bombardier.

Other income and expenses consist of capital gains / losses on disposal of businesses, restructuring and rationalisation costs and impairment loss and other . Alstom classify these costs as inherently difficult to predict due to their irregular or non-recurring nature. When looking in the period 2014-2018 it is evident that there are consistently expenses incurred on the three different items before mentioned. It is therefore generally assumed that these items although they are defined as being irregular or non-recurring is a necessary part of a firm's day-to-day operations. Therefore, they are necessary to forecast in the later section of this paper, as it is expected that other income and expenses are expected to recur frequently as a part of the firm adjusting to changing market conditions. These costs are classified as operating, however unusual and thereby not part of the core operating result (Sørensen, 2017).

Financial income and financial expenses consist of interest income, interest expenses on borrowings, net cost of foreign exchange hedging, net financial expenses from employee defined benefit plans, and other financial income and expenses. These items are not considered a part of the firm's core activity and is therefore classified as financial.

Share in net income of equity accounted investments, have been treated as financial activity as it hasn't been possible to identify what investments were relating to operational activities and which weren't, and also what their individual contribution has been to the income statement. Therefore, are these investment also seen as relating to the financial activity of the firm, also described earlier when reformulating the balance sheet.

Net profit from discontinued operations relates to asset held for sale and can be component from an entity which has been disposed and hereby arises as a onetime profit. Based on this the item is seen as financing activity and therefore not part of continuing core activity, mainly because of its non-recurring nature and is hereby treated as an unusual item.

Based on the above considerations the analytical statement of Alstom and Bombardier can be calculated and can be seen in appendixes.

### Profitability Analysis

An important element when defining the future expected profitability of a firm is to do an analysis of the historical profitability. Therefore, an assessment of the level of returns is needed in order to evaluate whether the historical profitability has been at a satisfactory level. In order to determine whether the return on invested capital is satisfactory the weighted average cost of capital (WACC) is calculated for both Alstom and Bombardier.

### WACC

The firm's cost of capital is dependent on the respective capital structure of the company so how much of their operations is financed with equity and debt. Separate required rates to each part of the firm's capital structure are calculated. The cost of debt needs to be calculated in order to find the required rate of return to the firm's debt and the cost of equity needs to be calculated to find the required rate of return to the equity part.

Moreover, the tax rate needs to be set in order to consider the tax shield the firm obtains by operating with debt. The market value of net interest-bearing liabilities is already calculated as part of reformulating the balance of the firm. As financial items usually are recognized at

fair value, the book value seems as a fair proxy to the market value of NIBL (Christian Petersen, 2017). The market value of equity is found by looking at shares outstanding times the closing share price end of the given fiscal year, which multiplied will yield the market value of equity. Market values are used instead of book values as these contains more information and moreover because equity is negative for Bombardier, which otherwise would make it difficult to calculate WACC appropriately. The cost of capital for the firm can therefore be described by below formula.

$$WACC = \frac{NIBL}{NIBL + EQUITY} \cdot r_d \cdot (1 - t) + \frac{EQUITY}{NIBL + EQUITY} \cdot r_e$$

In the notes of the financial statements the total weighted average effective interest rate is disclosed for every year regarding newly obtained debt (Alstom, Consolidated Financial Statements 2019, 2019). An average of this number across the period therefore seems representative for the required rate of return to the company's debt. The average is 3,9% and doing a quick sanity check on the calculated net borrowing cost for NIBL which is -9,3%, implies that the average effective interest rate cannot be used. However, as Alstom have positive NIBL the NBC seems hard to interpret when comparing it to effective interest rate disclosed in the annual reports, which is why the effective interest rate actually seems to be more useful as it is based on actual obtain new debt for the given year, why it is used instead of NBC. For Bombardier the disclosed total average weighted effective interest rate is 5,38%. When looking at the net borrowing cost for Bombardier the average in same period is 7% suggesting that 5,61% might be too optimistic. However, in order to align the calculation method for both companies the weighted average effective interest rate is used as the cost of debt for the two companies.

The tax rate of the firm is set to be the marginal tax rate, which is 34,43% (Alstom, Consolidated Financial Statements 2019, 2019). This tax rate is also used to calculate NOPAT and therefore seems as a fair tax rate to use as we hereby fulfill the requirement for similar taxation on return for debt and equity (Christian Petersen, 2017). The marginal tax rate for Bombardier is 26,70% (Bombardier, Financial report 2019, 2020).

The required rate to equity is calculated based on the capital asset pricing model (CAPM). This model seems the most appropriate to calculate the required rate of return on equity, as

the companies are listed on a stock exchange and traded frequently (Damodaran, Estimating Risk Parameters, 1999). The model requires three variables to be computed the risk-free rate and risk premium of the market and the beta of the company. The formula for the model can be seen below.

$$CAPM = Riskfree\ rate + Beta \cdot (Risk\ Premium)$$

The Beta is found using the regression approach also described by Aswath Damodaran (Damodaran, Estimating Risk Parameters, 1999). This approach measures the correlation between stock prices for the respective company against the market leading index over a period. As Alstom is listed on Euronext Paris stock exchange the leading index would be the CAC40, which includes 40 of the most significant stocks among the largest 100 market cap companies on Euronext Paris. In order to measure the correlation between Alstom stock prices and the stock price of CAC40, it is needed to calculate the daily stock returns. This is done using below formula.

$$Stock\ returns_t = \frac{Stock\ Price_t - Stock\ Price_{t-1}}{Stock\ Price_{t-1}}$$

Hereafter the variance and standard deviation is calculated for the daily returns for Alstom and CAC40 and lastly the correlation between Alstom and CAC40 is computed. These values are then inserted in below formula.

$$Beta = \frac{\sigma_{Asset} \cdot \sigma_{Index} \cdot \rho_{Asset:Index}}{\sigma_{Index}^2}$$

Consequently, this gives us a beta of 0.68 (rounded). There is used 1277 daily observations for both Alstom and CAC40 over a 5 year period stretching from 31/3/2014 to 31/3/2019 (Finance, 2020), which is the same period as the financial statements analyzed. The period has deliberately been chosen to be the same in order to match the given risk profile of the company with the reported financial numbers.

For Bombardier the same approach couldn't be followed as they operate both within train manufacturing as well as within the aircraft industry. Therefore, it is necessary to use an unlevered industry beta of 0,85 (Christian Petersen, 2017). The unlevered industry beta is hereafter re-levered back to a levered beta using the firms tax rate and debt to equity ratio, yielding a beta of 2,26 in 2018 (rounded).

The market risk free rate is seen as the 10-year government bond yields from France. This seems appropriate as Alstom is based in France and reports their financial results in euros, and thereby doing this might counter the effect of inflation. The average rate of the 10-year government bond yields is calculated from 31/3/2013 to 31/3/2019 and amounts to 0,80% (rounded) (Investing , 2020). For Bombardier the market risk free rate is seen as the yield from the 10-year government bond from Canada for the fiscal period 01/01/2014 to 31/12/2018, which amounts to 1,67%.

The market risk premium is also calculated based on the same data used for calculating the beta for Alstom. Hereby the yearly returns are calculated for CAC40 and then an average for the period is computed in order to find the average yearly market returns for the period. As an example, the market returns for the fiscal year 2015 for Alstom is calculated based on percentages increase in CAC40 from 31/3/2014 to 31/3/2015, where 31/3/2015 is the date where the fiscal year for 2015 ends for Alstom. This results in an average 4,60% in yearly markets returns from CAC40, for the period 2014-2018, subtracting the risk-free rate of 0,80%, results in an average market risk premium for the period of 3,8%. For Bombardier the same approach has been taken, however the yearly market returns are calculated using Canadian leading stock market index S&P/TSX and using a period matching their respective fiscal period, which follows a calendar year. This results in an average yearly market return of 4,77%, subtracting the risk-free rate gives us a market risk premium of 3,1%.

The individually calculated WACC's for the firms can be seen in the following tables:

ALSTOM - WACC	2014	2015	2016	2017	2018
<b>Capital structure</b>					
Book Value Equity	4.667	3.776	3.262	3.313	3.795
Book Value NIBL	1.378	-1.603	-1.411	-1.754	-1.981
<b>Total</b>	<b>6.044</b>	<b>2.173</b>	<b>1.851</b>	<b>1.559</b>	<b>1.814</b>
Shares outstanding	309.792.497	219.127.044	219.711.830	222.210.471	223.572.313
Share Price	28,77	21,60	28,01	36,61	39,89
<b>Market Value of Equity (in million EUR)</b>	<b>8.913</b>	<b>4.733</b>	<b>6.154</b>	<b>8.135</b>	<b>8.918</b>
<b>Capital structure</b>					
Market value of Equity	8.913	4.733	6.154	8.135	8.918
Market value of NIBL	1.378	-1.603	-1.411	-1.754	-1.981
<b>Enterprise value (in million EUR)</b>	<b>10.290</b>	<b>3.130</b>	<b>4.743</b>	<b>6.382</b>	<b>6.937</b>
<b>Statutory tax rate</b>	34,43%	34,43%	34,43%	34,43%	34,43%
<b>Average cost of debt</b>	3,90%	3,90%	3,90%	3,90%	3,90%
<b>Avg cost of debt after tax</b>	2,56%	2,56%	2,56%	2,56%	2,56%
<b>CAPM</b>					
Average risk free rate	0,80%	0,80%	0,80%	0,80%	0,80%
Beta	0,68	0,68	0,68	0,68	0,68
Market average yearly returns	4,60%	4,60%	4,60%	4,60%	4,60%
Market average yearly risk premium	3,80%	3,80%	3,80%	3,80%	3,80%
<b>Cost of equity</b>	3,38%	3,38%	3,38%	3,38%	3,38%
<b>WACC after tax</b>	3,27%	3,81%	3,63%	3,61%	3,62%
<b>WACC before tax</b>	3,45%	3,12%	3,23%	3,24%	3,24%
Default risk	0,18%	0,18%	0,18%	0,18%	0,18%
Bankruptcy costs	20%	20%	20%	20%	20%
<b>WACC after tax - adj for default risk</b>	<b>3,29%</b>	<b>3,80%</b>	<b>3,94%</b>	<b>4,27%</b>	<b>4,23%</b>

(Source: Own contribution)

Bombardier - WACC	2014	2015	2016	2017	2018
<b>Capital structure</b>					
Book Value Equity	-871	-2.047	-4.430	-4.355	-4.685
Book Value NIBL	3.872	3.767	3.909	3.584	3.907
<b>Total</b>	<b>3.001</b>	<b>1.719</b>	<b>-521</b>	<b>-771</b>	<b>-779</b>
Shares outstanding	1.424.395.218	2.082.683.000	2.212.547.000	2.195.379.000	2.316.824.000
Share Price	4,08	1,34	2,16	3,03	2,03
Market Value of Equity (in million CAD)	5.812	2.791	4.779	6.652	4.703
<b>CAD to USD</b>	<b>0,86161</b>	<b>0,72076</b>	<b>0,74415</b>	<b>0,79489</b>	<b>0,73355</b>
<b>Capital structure</b>					
Market value of Equity (50% of total)	2.504	1.006	1.778	2.644	1.725
Market value of NIBL	3.872	3.767	3.909	3.584	3.907
<b>Enterprise value (in million USD)</b>	<b>6.375</b>	<b>4.772</b>	<b>5.687</b>	<b>6.228</b>	<b>5.632</b>
<b>Statutory tax rate</b>	<b>26,70%</b>	<b>26,70%</b>	<b>26,70%</b>	<b>26,70%</b>	<b>26,70%</b>
<b>Average cost of debt</b>	<b>5,38%</b>	<b>5,38%</b>	<b>5,38%</b>	<b>5,38%</b>	<b>5,38%</b>
<b>Avg cost of debt after tax</b>	<b>3,94%</b>	<b>3,94%</b>	<b>3,94%</b>	<b>3,94%</b>	<b>3,94%</b>
<b>CAPM</b>					
Average risk free rate	1,67%	1,67%	1,67%	1,67%	1,67%
Unlevered industry beta	0,85	0,85	0,85	0,85	0,85
Levered beta	1,81	3,18	2,22	1,69	2,26
Market average yearly returns	4,77%	4,77%	4,77%	4,77%	4,77%
Market average yearly risk premium	3,10%	3,10%	3,10%	3,10%	3,10%
<b>Cost of equity</b>	<b>7,29%</b>	<b>11,54%</b>	<b>8,55%</b>	<b>6,92%</b>	<b>8,68%</b>
<b>WACC after tax</b>	<b>5,26%</b>	<b>5,54%</b>	<b>5,38%</b>	<b>5,21%</b>	<b>5,39%</b>
<b>WACC before tax</b>	<b>6,13%</b>	<b>6,68%</b>	<b>6,37%</b>	<b>6,04%</b>	<b>6,39%</b>
<b>Default risk</b>	<b>19,14%</b>	<b>19,14%</b>	<b>19,14%</b>	<b>19,14%</b>	<b>19,14%</b>
<b>Bankruptcy costs</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>WACC after tax - adj for default risk</b>	<b>24,17%</b>	<b>23,95%</b>	<b>31,89%</b>	<b>29,13%</b>	<b>29,80%</b>

(Source: Own contribution)

### Adjusting WACC for default risk and bankruptcy costs

As it can be seen from previous tables the WACC is adjusted for the individual firm's default risk and bankruptcy costs. This is done using the framework from (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013). The formula is shown below.

$$WACC_{Adjusted} = WACC_{Before\ tax} - P \cdot T \cdot \frac{NIBL}{EV} \cdot r_d + R \cdot B$$

R = Risk of default

P = Survivorship probability → (1-R)

T = Statutory tax rate

$r_d$  = Cost of debt before tax

B = Bankruptcy cost

Alstom's credit rating is Baa2 in 2018 (Moody's, 2020), which yields a probability of default of 0,18% (Christian Petersen, 2017), because of the low probability of default, the adjusted WACC isn't much different from the current one. Alstom's WACC increases from 3,63% to 4,54% in 2018.

Bombardier is rated with an Caa2 rating by Moody's (Moody's, 2020), this results in a probability of default of 19,14% (Christian Petersen, 2017). Using the framework from (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013). This will increase Bombardier's WACC from 5,39% to 13,18% in 2018.

The bankruptcy costs can be hard to measure, however the academic literature on this suggest that it can be up to 20% in some instances and even higher for some firms (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013). An approximate bankruptcy cost of 5% is chosen to be suitable for both firms. The framework argues for the use of this correction as the normal DCF method doesn't considers the default risk and bankruptcy costs and therefore argue for the use of this correction as otherwise the valuations would encounter big pricing errors when default risk and bankruptcy costs are significant (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013).

#### [Analysis of profitability from core operations – Alstom](#)

Looking at the period analyzed for Alstom they have achieved high levels of ROIC on their core activities which averaged 22,2% for the period 2014-2018. This is very satisfactory seen in relation to the average WACC for the period of 4,49%. Core activities have therefore created added value for the equity holders. However, unusual items, dirty surplus items and change in accounting policies have negative effectively affected the core recurring profits. This has resulted in a negative return on equity in 2014 and 2016. Furthermore, looking at total ROIC including unusual items, returns haven't been satisfactory all years, in 2014 and 2016 ROIC total was respectively -37,47% and -3,78%, which is below average WACC and therefore seen as unsatisfactory. However, ROIC excluding unusual items has as before mentioned laid on a satisfactory level the whole period.

When looking at the trend for ROIC it seems very promising as it is increasing throughout the period. This is especially due to the increase in the turnover ratio, which increases

significantly, suggesting that Alstom is getting better at utilizing their invested capital. The EBIT margin is also increasing throughout the period, only in 2017 it decreases to rise again in 2018 to a new high of 7,1%. The turnover ratio takes a sudden decrease in 2018 as the only year where it decreases, however the decrease is countered by the increase in the EBIT margin which results in an increase in ROIC in 2018 to 27,1%.

Below table summarizes the result from the financial analysis.

FINANCIAL ANALYSIS	2014	2015	2016	2017	2018
<b>Financial ratios After tax</b>					
ROIC (NOPAT)	-37,24%	130,07%	-3,78%	19,46%	37,33%
NOPAT Margin (operating margin)	-13,6%	39,7%	-0,8%	4,0%	9,8%
Turnover ratio	2,7	3,3	4,6	4,8	3,8
Alternative ROIC	-37,2%	130,1%	-3,8%	19,5%	37,3%
<b>Core financial ratios before tax</b>					
ROIC (Core EBIT)	14,2%	17,4%	26,3%	26,2%	27,1%
EBIT Margin	5,2%	5,3%	5,8%	5,4%	7,1%
Turnover ratio	2,75	3,28	4,57	4,84	3,83
Alternative ROIC	14,2%	17,4%	26,3%	26,2%	27,1%
Core EBITDA	10,2%	12,1%	7,9%	7,7%	9,5%

(Source: Own contribution)

#### Analysis of profitability from core operations – Bombardier

Bombardier have negative invested capital due to negative equity, therefore it doesn't make sense to calculate ROIC as owners have negative invested capital in the company. Therefore, is the focus drawn to the core EBIT margin. The average for the period is 7,05% which in comparison to Alstom is 5,7% for the same period. This suggest that Bombardier has higher priced services and products or just in general are more cost efficient on their core activities. Due to the negative invested capital it also doesn't make sense to look at the turnover ratio. When looking at the total comprehensive income generated for the period it is only in 2014 and 2016, which are worsening the already negative equity for Bombardier.

When comparing the two companies further the core EBITDA margin is also examined more closely as this measure considers different depreciation and tax policies the companies have. Core EBITDA for Alstom averaged 9,5% for the period whereas Bombardier averaged 11,48% implying Bombardier are more effective in their operations all things being equal. Moreover, the trend of the EBIT margin is increasing which is very positive and suggests that

Bombardier are improving their operational performance throughout the period. Whereas, core EBITDA is more stable.

Financial ratios After tax	2014	2015	2016	2017	2018
ROIC (NOPAT)	-8,24%	31,92%	11,53%	-54,02%	-89,55%
NOPAT Margin (operating margin)	-2,57%	6,63%	-0,79%	4,89%	7,82%
Turnover ratio	3,21	4,82	-14,52	-11,06	-11,45
Alternative ROIC	-8,24%	31,92%	11,53%	-54,02%	-89,55%
Net borrowing cost (after tax)	1,58%	3,09%	6,51%	8,02%	6,24%
Spread between ROIC & net borrowing cost	-9,81%	28,84%	5,02%	-62,04%	-95,79%
Financial leverage	-4,45	-1,84	-0,88	-0,82	-0,83
ROE (COMPREHENSIVE INCOME)	35,39%	-21,13%	7,10%	-2,96%	-9,68%
Alternative ROE	35,39%	-21,13%	7,10%	-2,96%	-9,68%
<b>Core financial ratios before tax</b>					
ROIC (Core EBIT)	17,53%	27,04%	-107,38%	-92,35%	-96,33%
EBIT Margin	5,47%	5,62%	7,39%	8,35%	8,41%
Turnover ratio	3,21	4,82	-14,52	-11,06	-11,45
Alternative ROIC	17,53%	27,04%	-107,38%	-92,35%	-96,33%
Core EBITDA	9,80%	11,67%	12,21%	12,15%	11,59%

(Source: Own Contribution)

### Growth analysis

As the scope of the thesis is about Alstom's acquisition of Bombardier it would make sense to evaluate the current growth potential of the individual firms as an evaluation of the growth potential of the combined firm is later carried out.

Firms that are limited to a constant debt to capital ratio, such as Bombardier because of their negative equity position needs to fulfill specific debt covenants, where they cannot exceed specific financial ratios such as financial leverage etc. (Bombardier, Financial report 2018, 2019). These firms have a limited sustainable growth rate as they will need to finance their operations and possible reinvestments using mostly internally generated funds. As reinvestments are essential for creating growth this will limit the growth rate of which Bombardier can grow. Alstom because of their negative financial leverage actual have net financial assets and therefore have very good opportunities for changing their future debt to capital ratio enabling them to finance their future operations. Moreover, it is noticed that both firms are generally having a positive net income with the expectation of 2014 and 2016, which means the negative results needs to be financed with either equity or debt. In the remaining periods both firms achieve a positive net income thereby creating funds for reinvestments for tangible and intangible assets. Altering the payout ratio for Bombardier or increasing their net income would be the main two factors for increasing their sustainable growth rate. For Alstom it seems like they have enough funds to achieve their desired

growth levels and more in a mature market, because of their low debt to equity ratio, normal payout policy and satisfactory ROIC levels in most of the examined period.

Looking at Bombardier they have stable and slight increasing margins for EBITDA and EBIT suggesting that core operating profits are fairly stable with a positive trend, which suggest that growth in total comprehensive income for the period are influenced positively by recurring profits. However, although they have constant recurring operating profits and significant net income for 2015, 2017 and 2018. They still don't manage to decrease there NIBL or their negative equity. Looking at market values for equity for the same period also paints a negative picture as Equity is generally decreasing throughout the period.

Turning our eyes to Alstom it has been possible to conclude that growth and added value for the period has mainly been created because of special items, underlying change in accounting practice, net profits for discounted operations and dirty surpluses, which averaged 612m EUR for the period. However, Alstom also managed to create added from the core operating and recurring activities of 249m EUR. This totals an average EVA for the period 2015-2018 of 861m EUR. Core ROIC and EVA has generally increased throughout the period, with EVA increasing with a yearly average of 44% for 2015-2018. Alstom's growth is mainly coming from non-recurring items; however, the quality of the growth still seems satisfactory as EVA from recurring items generally are increasing throughout the period.

The quality of the growth in Bombardier couldn't be assessed due invested capital which quickly becomes negative for the analyzed period. Therefore, it doesn't seem relevant to further study the quality of growth for Bombardier using the same framework as done with Alstom. This is mainly due to the issue of the division of balance sheet for Bombardier, which prohibits the financial statements to articulate. Meaning that the changes in equity aren't affected by the performance coming from the income statement but is determined by assumptions made around the division. This approach was based on some assumptions which doesn't allow for the articulation, hereby making it irrelevant to look into the quality of growth using the EVA approach as done with Alstom. However, by referring to the analysis of the profitability of the core operations it is possible to conclude that Bombardier is operating with high EBITDA and EBIT margins which are increasing in the period 2014-2018, which seems positive all things being equal. Therefore, assuming a normal capital structure would suggest that recurring profits from recurring core items are being produced

with increasing EBITDA and EBIT margin throughout the period. Thereby suggesting that the quality of growth is good for the train business.

Alstom's ability to create added value for the shareholders can be summarized in below table.

Alstom - Growth analysis	2014	2015	2016	2017	2018
Revenue	6.163	6.881	7.306	7.346	8.072
Core EBIT	318	366	421	397	571
FCFF - Free cash flow to the firm	6.762	2.877	441	377	196
FCFE - Free cash flow to the equity holders	-23	3.220	-7	7	43
Market value of Equity	8.913	4.733	6.154	8.135	8.918
ROIC after tax	-37,24%	130,07%	-3,78%	19,46%	37,33%
WACC after tax - adj for default risk and bankruptcy cost	4,43%	4,00%	4,55%	4,92%	4,54%
EVA total		2830	-175	233	498
Core ROIC after tax	12%	10%	19%	20%	22%
EVA from recurring items		127	299	241	269
EVA from special items		2703	-474	-8	228
Growth in EVA recurring items			135,6%	-19,4%	11,8%

(Source: Own contribution)

#### Assessing quality of reported earnings

Cash flow and earnings should in the long run be the same, in order to assess the firm's ability to convert earnings to cash flows one can use the cash conversion rate (Christian Petersen, 2017).

$$\text{Cash conversion rate} = \frac{FCFE}{\text{Net earnings}}$$

Accounting based earnings are only indicators of much profits is converted into cash, since earnings are net-cash flows plus changes in accruals. Above formula can imply how well the given firm is at converting earnings to cash flows. When looking at Alstom cash conversion rate it becomes apparent that some adjustment needs to be done to net earnings in order to get a valid result from the formula. Net earnings are adjusted for dirty surpluses before being applied in the formula. As these dirty surpluses is generally assumed to have no effect on cash flow. After this adjustment the formula yields an average cash conversion rate of 44%, however looking at the latest three years it only yields an average of 7%, which seems to be very low. For the last two years it seems like the cash conversion rate has stabilized at 6% average, however this still seems low, as this suggest that the remainder net

income is relating to accruals. The quality of the reported earnings therefore seems to be low.

	2014	2015	2016	2017	2018
FCFE - Free cash flow to the equity holders excl. dirty surpluses	-230	2,533	68	-125	122
Net earnings excl. dirty surpluses	-1115	1637	-65	110	851
Cash conversion rate	21%	155%	-105%	-114%	14%

(Source: Own contribution)

For Bombardier the cash flow conversion rate is averaging 87% the last two years of the period. The net earnings therefore seem to be of higher quality relative to Alstom.

	2014	2015	2016	2017	2018
FCFE - Free cash flow to the equity holders excl. dirty surpluses	N/A	1805	2068	54	783
Net earnings excl. dirty surpluses		629	-597	275	508
Cash conversion rate		287%	-346%	20%	154%

(Source: Own contribution)

## SWOT

The most significant conclusions from the internal and external analysis are summarized in below figure. In addition, a short commentary is provided for the strengths, weaknesses, opportunities and threats for the firms.

### Strengths

Alstom and Bombardier both benefit from having a global presence in the industry, which enables them to mitigate geographic specific risk and further advances their possibilities of economic of scale. Additionally they both have a diversified product portfolio, which allows them to serve a broader range of customers, as well as serve existing customer with more relevant and innovative products. This here again enables them to obtain critical mass, which is necessary for obtaining the highest possible profitability. Moreover, Alstom has historically shown a strong ability to create added value for the company through core recurring profits, this combined with net financial assets gives Alstom a positive outlook for the future. As they are expected to be able to keep financing their growth and to deliver in accordance with historic performance. Bombardier have strong EBITDA and EBIT margins as well as a high quality of reported earnings, suggesting that they also have a positive outlook for the future if they can keep the same performance.

### Weaknesses

Alstom has a low utilization of their tax advantages as they are operating with net financial assets, it seems to be fair to assume that they aren't operating with the most optimal capital structure. However, the net financial assets can also be seen as an advantage due to the flexibility it gives Alstom to invest in new projects or companies. Another weakness could be the low quality of reported earnings Alstom are representing in comparison to Bombardier. For Bombardier one major weakness is the high cost of debt, which arises due to their negative equity. Additionally, Bombardier seems to have a low growth potential also due to their negative equity and high debt position, hereby questioning their ability to finance current and future operations. Which ultimately could lead to bankruptcy or abandonment as well as rejection of profitable projects due to the limitations in cash.

### Opportunities

The market outlook looks positive for both companies due to the expected increase in passenger traffic, which will increase the demand for their services. Additionally, the increasing climate concerns are increasing the pressure of countries to become more environment friendly. One possible solution to this could be to invest in more sustainable and eco friendly rail transport. Therefore, are the climate concerns seen as an opportunity for both companies to increase future sales. The pressure from climate changes can already be seen in the current political initiatives towards investments in the rail industry. These initiatives are also expected to increase future sales for both companies. Lastly, a more open and liberalized rail industry could in the future be another opportunity for the companies to increase their sales. As we can see in France, who is planning to open their rail sector for newcomers by 2024.

### Threats

Although the industry has proven to be a solution to high emissions coming from the transportation industry, especially from cars. There still exists a lot of alternatives to rail transport, such as cars, busses, ferries and flights. These transportation forms still seem to be available in the near future and thereby imposing a threat to the industry. As these transportation alternatives can have more valuable attributes over rail transport for some individuals. However, as mentioned in the PESTEL analysis initiatives for shifting people to use more rail transportation are already initiated and can reduce the threat of these substituting products. Lastly, there is the issue of COVID19, which are having a significant

impact on the economic well-being of the regions within Alstom and Bombardier operates. COVID19 is expected to be the main factor for the negative growth in GDP across all regions, which naturally also will have a negative effect on the investments made in rail transportation.

<b>SWOT</b>	
<b>Strengths</b>	<b>Weaknesses</b>
<p><b>Geographical diversification (common)</b></p> <p><b>Diversified product portfolio (common)</b></p> <p><b>Strong position in the industry due to the low number of suppliers in the industry (common)</b></p> <p><b>Positive increase in recurring EVA (Alstom)</b></p> <p><b>High net financial assets and equity (Alstom)</b></p> <p><b>High EBITDA and EBIT margins (Bombardier)</b></p> <p><b>High quality of reported earnings (Bombardier)</b></p>	<p><b>Low utilization of tax advantage (Alstom)</b></p> <p><b>Low quality of reported earnings (Alstom)</b></p> <p><b>High cost of debt (Bombardier)</b></p> <p><b>Low growth potential due to negative equity (Bombardier)</b></p>
<b>Opportunities</b>	<b>Threats</b>
<p><b>Growing industry – measured by increase in passenger traffic (common)</b></p> <p><b>Increasing climate concerns (common)</b></p> <p><b>Increasing positive political initiatives towards the rail industry (common)</b></p> <p><b>Liberalization of the industry (common)</b></p>	<p><b>Alternatives to rail transport (common)</b></p> <p><b>COVID19 (common)</b></p>

## Forecasting stand alone

So far, the focus has been retrospectively focusing on historical data on the firm's competitive advantages and profitability. Now the focus switch to be forward looking and revolves around the development of the firm's pro forma statement for the income, balance and cash flow statements. The assumptions for the future projected statements are discussed in the following sections.

The most theoretical correct valuation is based on a DCF-model by discounting the firms future cash flows. These can of practical reason not be found in the past, why a forecasting period needs to be determined (Sørensen, 2017). From the previous analyses the future of the firm's pro forma statement will be forecasted, which afterwards will be used in the DCF valuation.

There is collected data from 2014-2018. For Bombardier there fiscal year follows the calendar year, however for Alstom their fiscal year runs from 1th of April to 31th of March. This have resulted in Alstom missing three months of the calendar year. Nevertheless, it is assumed that Alstom fiscal year running from 1th of April to 31th of March is comparable to a calendar year, as it is only three months difference. Hereby it is furthermore assumed that today is 31/12/2018 and that the forecast period will run as five-year period from 31/12/2018 to 31/12/2023. As both companies has reached the maturity stage it seems difficult to argue for a longer forecasting period, as growth rates are considered to be fairly moderate and stable for these companies in the future given the current market conditions.

There is adopted a top down forecasting approach where revenue is first projected for the period and hereafter is the remaining items calculated as a percentage of revenue. Many of these number will follow historical levels and trends by using an average of the numbers across the past period. The forecasting framework as described by (Christian Petersen, 2017) is followed.

## Forecasting revenue

Alstom and Bombardier have seemingly good opportunities for future revenue growth as there is multiple factors as identified in the strategic analysis which positively influence the market outlook for the industry.

In order to forecast the revenue for the two companies it is necessary to consider three factors. The current historic revenue growth, the growth in real GDP for the different regions wherein they operate and the demand for their services measured in passenger traffic. Historic revenue growth is the factor having the less weight of 10%, whereas passenger traffic has the highest weight of 70% and real GDP growth weighs 20% in the total weighted revenue growth estimate. The computed average revenue growth across the period is 2,28%. The growth rate is positive as the demand for passenger traffic as well as economic growth in the regions wherein they operate are increasing throughout the period, which indicates that the market is growing. This could lead to the possibility for Alstom to grow their revenue. Moreover, Alstom have shown historically that they are able to grow their revenue significantly with an average of 7% from 2014-2018, therefore 2,28% seems as a conservative and representative estimate.

For Bombardier the same approach has been applied and this has resulted in estimated average revenue growth of 1,1%. The weights have been the same for Bombardier, historic growth weighted 10%, Real GDP 20% and passenger traffic 70%. This therefore implies that the difference in the forecasted revenue growth stems from differences in historic revenue growth, which ultimately lead to Bombardier only growing with 1,1% whereas Alstom is growing with 2,2%. The lower growth for Bombardier can be justified by looking at the SWOT analysis. Where several weaknesses have been identified for Bombardier. There negative equity position will hamper the possibility for them to acquire and grow their revenue. Moreover, because of the high financial leverage Bombardier is experiencing high borrowing costs which furthermore will make it difficult for them to retain earnings and make new reinvestments in future projects. Overall this thereby seems fair to assume that Bombardier have worsened conditions for growth, which results in growing at half the rate of which Alstom is projected to grow at.

Besides that, economic growth in the regions are expected, measured through real GDP growth, and passenger traffic is increasing, there are several other arguments that can justify a growth rate for both companies. For both companies the growth rate can further be justified by looking at the opportunities and internal strengths identified in the SWOT analysis. Alstom and Bombardier both have a diversified product portfolio as well as being geographical present in most of the world, which gives them good opportunities to service

new and existing customers. As identified through Porters Five Forces the current and future most lucrative generic strategy is differentiating leader strategy, which is the one Alstom and Bombardier is following by reaching out to a large targeting group with multiple high technological and innovative products. Moreover, political initiatives towards investments in trains and climate concerns are fueling the global need for train transportation which will influence positively for both Bombardier and Alstom's revenue growth all things being equal.

Below tables summarizes the calculations for the revenue growth for both Alstom and Bombardier.

Common growth estimates for both companies (Source: Own contribution):

<b>Weighted real growth in GDP</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>WEIGHT</b>
Europe	0,58%	-0,20%	0,80%	0,69%	0,68%	20%
Americas	0,44%	-0,48%	0,67%	0,42%	0,40%	20%
Asia & Pacific	0,46%	-0,40%	0,52%	0,49%	0,51%	20%
Middle-East & Africa	-0,18%	-0,67%	0,43%	0,41%	0,44%	20%

<b>Weighted growth in passenger traffic</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>WEIGHT</b>
Europe	0,56%	0,57%	0,58%	0,59%	0,60%	70%
Americas	0,80%	0,80%	0,81%	0,81%	0,81%	70%
Asia & Pacific	1,44%	1,44%	1,45%	1,45%	1,45%	70%
Middle-East & Africa	0,91%	0,92%	0,93%	0,94%	0,95%	70%

Alstom's revenue growth estimate:

<b>Historic revenue growth Alstom</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>AVERAGE</b>
Revenue Growth Europe		-6%	0%	-9%	8%	-1,44%
Revenue Growth Americas		43%	18%	7%	10%	19,53%
Revenue Growth Asia & Pacific		50%	4%	28%	2%	21,18%
Revenue Growth Middle-East & Africa		66%	19%	9%	19%	28,13%
<b>TOTAL REVENUE GROWTH</b>		<b>12%</b>	<b>6%</b>	<b>1%</b>	<b>10%</b>	<b>7,06%</b>

<b>Historic average revenue growth weighted</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>WEIGHT</b>
Europe	-0,14%	-0,14%	-0,14%	-0,14%	-0,14%	10%
Americas	1,95%	1,95%	1,95%	1,95%	1,95%	10%
Asia & Pacific	2,12%	2,12%	2,12%	2,12%	2,12%	10%
Middel-East & Africa	2,81%	2,81%	2,81%	2,81%	2,81%	10%

<b>Total weighted revenue growth estimate</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>WEIGHT</b>
Europe	1,00%	0,23%	1,23%	1,13%	1,13%	100%
Americas	3,19%	2,28%	3,43%	3,18%	3,17%	100%
Asia & Pacific	4,02%	3,16%	4,08%	4,06%	4,08%	100%
Middle-East & Africa	3,54%	3,07%	4,18%	4,17%	4,20%	100%
<b>Total forecasted revenue</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	
Europe	4101	4111	4161	4209	4256	
Americas	1517	1551	1605	1656	1708	
Asia & Pacific	958	988	1029	1070	1114	
Middle-East & Africa	1677	1729	1801	1876	1955	
<b>Total forecasted revenue</b>	<b>8254</b>	<b>8379</b>	<b>8596</b>	<b>8811</b>	<b>9034</b>	
<b>Total revenue growth</b>	<b>2,25%</b>	<b>1,52%</b>	<b>2,58%</b>	<b>2,50%</b>	<b>2,53%</b>	

(Source: Own contribution)

Bombardier's revenue growth estimate:

<b>Historic revenue growth Bombardier</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>AVERAGE</b>
Europe		-17,40%	-7,43%	2,53%	8,85%	-3,36%
North America		-15,06%	-4,93%	48,34%	-3,94%	6,10%
Asisa-Pacific		0,58%	-10,60%	13,46%	7,06%	2,62%
Rest of world		2,07%	-22,80%	28,45%	-14,99%	-1,82%
<b>TOTAL</b>		<b>-13,91%</b>	<b>-8,54%</b>	<b>12,90%</b>	<b>4,26%</b>	<b>-1,32%</b>

<b>Historic average revenue growth weighted</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>WEIGHT</b>
Europe	-0,34%	-0,34%	-0,34%	-0,34%	-0,34%	10%
North America (Americas)	0,61%	0,61%	0,61%	0,61%	0,61%	10%
Asisa-Pacific	0,26%	0,26%	0,26%	0,26%	0,26%	10%
Rest of world (Middle-East & Africa)	-0,18%	-0,18%	-0,18%	-0,18%	-0,18%	10%

<b>Total weighted revenue growth estimate</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>WEIGHT</b>
Europe	0,80%	0,03%	1,04%	0,94%	0,94%	100%
North America (Americas)	1,85%	0,93%	2,09%	1,84%	1,82%	100%
Asisa-Pacific	2,17%	1,31%	2,23%	2,21%	2,23%	100%
Rest of world (Middle-East & Africa)	0,54%	0,07%	1,18%	1,17%	1,21%	100%
<b>Total forecasted revenue</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	
Europe	5566	5568	5626	5679	5733	
North America (Americas)	1789	1806	1844	1878	1912	
Asisa-Pacific	1162	1177	1203	1230	1257	
Rest of world (Middle-East & Africa)	502	502	508	514	520	
<b>Total forecasted revenue</b>	<b>9019</b>	<b>9053</b>	<b>9181</b>	<b>9300</b>	<b>9422</b>	
<b>Total revenue growth</b>	<b>1,2%</b>	<b>0,4%</b>	<b>1,4%</b>	<b>1,3%</b>	<b>1,3%</b>	

(Source: Own contribution)

### Forecasting EBITDA

Another important part of the pro forma statements for Alstom and Bombardier is the forecast of EBITDA. Stable performance is the most reliable to forecast (Christian Petersen, 2017), it is therefore necessary to first examine the stability of the EBITDA margin in the past. When looking at Alstom EBITDA which have been fluctuating. The two first years 2014 and 2015 EBITDA margin averaged 11,2% whereas the last three years of the period the EBITDA margin averaged 8,4%. Moreover, the EBITDA margin didn't fluctuate as much the last three years 2016-2018. In order to get an average reliable EBITDA margin and to even out effects of peaks in EBITDA margin in 2014 and 2015, an average of the last three years of the EBITDA margin is chosen as the future projected EBITDA margin. This results in an average EBITDA margin for the forecasted period of 8,4%.

For Bombardier the EBITDA margin have been more stable throughout the whole period, especially the last three years. For 2014 and 2015 the average EBITDA margin was 10,73% for 2016-2018 it was 11,98%. It seems like Bombardier have achieved some stability in the EBITDA margin in the period 2016-2018 and the average of 11,98% is therefore used as the projected EBITDA margin for the company.

### Forecasting other items

Most of the other items forecasted are showing the same signs of stability as with EBITDA and revenue in the last three years of the period. Therefore, the three-year average from 2016-2018 is used to project most of the remaining items. However, there is some exceptions, including forecasting of comprehensive income and the tax rate. For the tax rate both Bombardier and Alstom are using the marginal tax rate of 26,80% and 34,43% instead of an average effective tax rate. It seems more representative to do this since the effective tax rates fluctuates significantly throughout the period making it hard to forecast.

Comprehensive income also fluctuates significantly throughout the period, however here it seems more appropriate to include all years in the average estimate instead of only the last three years average. So, it is assumed that the fluctuations for comprehensive income is informative and can be used as an estimate for the future fluctuations with an average estimate of the whole past period. Lastly NIBL as a percentage of invested capital seems to have reached more realistic and stable measures in 2017 and 2018 for Bombardier, why the measure for this estimate is based on the last two years average instead of last three years.

The forecast assumptions can be summarized in below tables:

Alstom - Forecasted financial items	2019	2020	2021	2022	2023	
Revenue growth	2,25%	1,52%	2,58%	2,50%	2,53%	Based on revenue forecast
EBITDA/REVENUE	8,4%	8,4%	8,4%	8,4%	8,4%	Average of last three years
Depreciation/intangible and tangible assets	4,9%	4,9%	4,9%	4,9%	4,9%	Average of last three years
Interest	-5,8%	-5,8%	-5,8%	-5,8%	-5,8%	Average of last three years
Tax rate	34,43%	34,43%	34,43%	34,43%	34,43%	Statutory tax rate
Intangible and tangible assets/revenue	47,0%	47,0%	47,0%	47,0%	47,0%	Average of last three years
NWC/revenue	-24,1%	-24,1%	-24,1%	-24,1%	-24,1%	Average of last three years
NIBL/IC	-107,6%	-107,6%	-107,6%	-107,6%	-107,6%	Average of last three years
<b>Other items:</b>						
Other income/(expense)	1,6%	1,6%	1,6%	1,6%	1,6%	Average of last three years
Share in net income of equity accounted invest	-2,2%	-2,2%	-2,2%	-2,2%	-2,2%	Average of last three years
Net profit from discontinued operations	-1,0%	-1,0%	-1,0%	-1,0%	-1,0%	Average of last three years
Operating dirty surplus items	2,2%	2,2%	2,2%	2,2%	2,2%	Average of whole period
Financial dirty surplus items (after tax)	0,5%	0,5%	0,5%	0,5%	0,5%	Average of whole period

(Source: Own contribution)

Bombardier - Forecasted items	2019	2020	2021	2022	2023	
Revenue growth	1,2%	0,4%	1,4%	1,3%	1,3%	Based on revenue forecast
EBITDA/REVENUE	11,98%	11,98%	11,98%	11,98%	11,98%	Average of last three years
Depreciation/intangible and tangible assets	14,16%	14,16%	14,16%	14,16%	14,16%	Average of last three years
Interest	9,45%	9,45%	9,45%	9,45%	9,45%	Average of last three years
Tax rate	26,70%	26,70%	26,70%	26,70%	26,70%	Statutory tax rate
Intangible and tangible assets/revenue	27,66%	27,66%	27,66%	27,66%	27,66%	Average of last three years
NWC/revenue	-35,88%	-35,88%	-35,88%	-35,88%	-35,88%	Average of last three years
NIBL/IC	-483,34%	-483,34%	-483,34%	-483,34%	-483,34%	Average of last two years
<b>Other items:</b>						
Special items	1,19%	1,19%	1,19%	1,19%	1,19%	Average of whole period
Other comprehensive income % revenue	0,75%	0,75%	0,75%	0,75%	0,75%	Average of whole period

(Source: Own contribution)

If the reader wishes to compare the forecasted items against historical levels and averages, the tables for these historical items can be found in an appendix.

## Standalone Valuation

In this section the enterprise value of Alstom and Bombardier is now calculated. This is done by applying the discounted cash flow model (DCF). Hereafter is the DCF model compared against industry multiples, hereby comparing the valuation against the industry valuation.

The DCF model assesses the companies' value by discounting future cash flows to a net present value using an appropriate discount rate. This is the most theoretical correct model, as it considers the firm's cash flow, however these are based on future estimates why the cash

flows might turn out to be inaccurate. In practice there is used an explicit forecasting period and a terminal period, which determines the going concern value of the company.

The cash flow is discounted by the calculated WACC for both companies. This represents the markets risk premium, plus a premium for the risk the investor takes by investing in the company. By discounting the future projected cash flows with the WACC the enterprise value is calculated cf. the law of one price, given a similar investment project with the same risk and cash flows (Revision, 2018).

The forecasted capital structure follows a constant debt to equity ratio throughout the whole period for both firms. This is done in order to eliminate any positive effects that would arise from the financing activity in relation to the change of the capital structure. As the focus of this valuation is mainly focused with the value creation made from the firms operating activities. In order to ensure these assumption holds it is necessary to look at any positive cash surpluses as excess cash, which hereby means that all of the created cash surpluses for the period are assumed to be paid out to the equity holders.

Moreover, it is assumed that the growth in sales in the terminal period has decrease to long term growth rate of 1% for both firms. Furthermore, the NOPAT margin, turnover ratio is assumed to have reached a constant level in terminal period. As the firms are matured it doesn't seem to make sense to extend the forecasting period and steady state assumption is therefore also assumed to be reached in the terminal period.

As mentioned in the profitability analysis where WACC was first calculated for the firms WACC was adjusted for default risk and bankruptcy cost. Moreover, the calculated WACC was based on the observed market values of equity and NIBL in the market as these can be concluded to contain more information about the real values of equity and NIBL (Christian Petersen, 2017). Book values for NIBL was however assumed to be representative for the market value of NIBL due to the way financial assets and liabilities are recognized in the balance sheet at fair value (Christian Petersen, 2017) and therefore used as proxy for market value. Although the forecasted debt to equity ratios aren't the same as when looking at market values for the period 2019-2023, it is still assumed that the WACC calculated for 2018 can be used for the period, as it seems to be more representative than book values. Moreover, Bombardier has a negative book value of equity making it difficult to use

traditional book values in order to calculate WACC. As there is forecasted a constant debt to equity ratio, it seems fair to assume a constant WACC across the forecasting period given that the financial situation of the company doesn't change. One could argue that this wouldn't be fair given Bombardier shows stable operational performance in the forecasting period, justifying reductions in NIBL. However, net income for the explicit forecasting period only amounts to 400m USD, which isn't a very significant adjustment to the current NIBL that else could have been made for the forecasting period. Additionally, the negative equity position in general questions the possibility for calculating a going concern value because of the high default risk, which could further reduce the value of the company. However, the risk is incorporated into going concern value given how the circumstances currently are for Bombardier now and how it is expected to be in the future.

Moreover, it is assumed that both companies are investing in projects which average the current risk profile of the company and hereby cost of equity doesn't change throughout the period. Moreover, the risk premium calculated for the last five years are held constant in the period in order to achieve the same WACC. One could have tried to forecast these rates in order to get a more reliable risk premium estimate and hereby WACC. However, as stocks typically follow a random walk it would be impossible to forecast accurately, questioning the added value of including this updated measure in the WACC. Moreover, the risk-free rate also would be inevitable hard to forecast accurately. Therefore, it seems fair to use the past calculated WACC for 2018 based on market values. Referring this to the used literature (Christian Petersen, 2017) and (Damodaran, Estimating Risk Parameters, 1999), which also suggest that these past values can be used as fair proxies for valuing companies. This hereby results in an calculated WACC of 13,18% for Bombardier and 4,54% for Alstom. The same rates are also used in the terminal period as mentioned before.

After discounting the free cash flow from the firm, the estimated market value of equity for Alstom is 6,2m billion euros, which divided by shares outstanding gives us a share price of 38 euros per 31/12/2018, or in practice 31/03/2019 following Alstom's financial year, compared against the actual share price assuming the same date, gives us an actual share price of 39 euros. Hereby validating the DCF valuation of Alstom which can be assumed to be relative the same as the market values them approximately

The estimated market value of equity for Bombardier is 0,8 billion euros. As the share price is in CAD the estimated market value of equity in CAD is also calculated to be 1,2 billion CAD and divided by number of outstanding shares gives us a share price of 0,51 per 31/12/2018, compared to the actual share price of 1,02 per 31/12/2018 suggests that the DCF valuation are way too pessimistic in its estimation of the equity value. However, the actual share price is calculated as 50% of the total share price for Bombardier, assuming that the aircraft business and trains business is equally valuable. Hereby concluding that the total share price for Bombardier actually is 2,04. However, as Bombardier's train business doesn't have a separate listed stock on any stock exchange and hereby isn't possible to observe the market value directly in the market the 50/50 assumption is adopted. This concludes that Bombardier's valuation as with the valuation of Alstom might be too pessimistic but is due to the 50/50 assumption and this valuation can therefore not be ased reliably against market values.

The findings from the DCF valuation for Alstom can be found below.

DCF Model - Alstom - EUR	SUM	1	2	3	4	5	Terminal
Free cash flow to the firm (FCFF)		499	255	241	249	255	257
WACC after tax		3,63%	3,63%	3,63%	3,63%	3,63%	
WACC after tax - adj for default risk		4,54%	4,54%	4,54%	4,54%	4,54%	4,54%
Discount factor		0,957	0,915	0,875	0,837	0,801	
Present value of FCFF	1.334	477	233	211	208	204	
Value of FCFF in Terminal Period	7.266						
Estimated Enterprise value (Market value of equity)	8.599						
Excess Cash	-2.050						
Estimated Enterprise value	6.549						
Shares Outstanding in thousands	223.572						
Estimated Share Price (31/12/2018)	38						
Actual Share Price (31/03/2019)	39						

(Source: Own contribution)

The findings from the DCF valuation of Bombardier can be found below.

	2018	2019	2020	2021	2022	2023	
DCF Model	SUM	1	2	3	4	5	6
Free cash flow to the firm		322	363	376	380	385	388
WACC after tax		5,39%	5,39%	5,39%	5,39%	5,39%	
WACC considering risk of default		13,18%	13,18%	13,18%	13,18%	13,18%	13,18%
Discount factor		0,88	0,78	0,69	0,61	0,54	
Present value of FCFF	1265	284	283	259	231	207	
Value of FCFE in Terminal Period	3191						
Estimated Enterprise value USD	4456						
Estimated Enterprise value EUR	4051						
Estimated Enterprise value CAD	6074						
NIBL (USD)	3584						
Estimated market value of equity USD	872						
Estimated market value of equity EUR	793						
Estimated market value of equity CAD	1189						
Shares Outstanding	2.316.824.000						
Estimated Share Price CAD (31/12/2018)	0,51						
Actual Share Price CAD (31/12/2018)	1,02						

(Source: Own contribution)

### Estimating the free cash flow to the firm

The free cash flow to the firm is calculated based on the proforma statements which was computed based on the assumptions made in the forecasting section. The formula for the free cash flow to the firm (FCFF) can be seen below.

$$FCFF_t = NOPAT_t + Depreciation_t - \Delta NWC_t - Net Investment s_t$$

Moreover, the formula for net investments can be seen below.

T = intangible and tangible assets

$$Net\ investment\ s_t = T_t - T_{t-1} + Depreciation_t$$

Using the forecasted numbers yields us a valuation in enterprise value of Alstom of 6,5 billion euros and 4 billion euros for Bombardier when adding the market value of NIBL to the market value of equity or subtracting any excess cash.

### Multiples Analysis

Although it has been possible to conclude that Bombardier and Alstom have sustainable competitive advantages and good opportunities for future growth it seems reasonable to test the DCF valuation with other enterprise values from competing companies. This is done in order to support the current valuations validity. The multiples are provided by Aswath Damodaran (Damodaran, Enterprise Value Multiples by Sector (US), 2020). The industry average regarding EV/EBITDA is 12,56 and for EV/EBIT it is 16,55. When applying before mentioned multiples it becomes clear that both valuations are conservative in comparison to what the current market outlook would value the companies at, especially for Bombardier. Alstom DCF valuation seems to be close to the multiple's valuation, which seems to further justify the valuation. For Bombardier however the multiple valuation is way off, and this is because of the high default risk, which aren't incorporated into the multiple valuation, however this is incorporated into the DCF. Thereby is the DCF valuation still yielding the most accurate result.

As both companies have achieved fairly stable EBITDA and EBIT margins the last three years further justifies the use of the multiple valuation, as the EBITDA margin in the future seems obtainable for the companies, which is requisite for the multiple to yield a valid valuation

The findings for the multiple analysis can be seen in below table.

INDUSTRY MULTIPLES				
EV/EBITDA	12,56			
EV/EBIT	16,55			
		Estimated EV	Estimated EV	
<b>ALSTOM</b>	<b>2018</b>	<b>Multiples</b>	<b>DCF (EUR)</b>	<b>Difference</b>
EBITDA (EUR)	766	9621	6549	3072
EBIT (EUR)	571	9450	6549	2901
<b>BOMBARDIER</b>				
EBITDA (USD)	1033	12974	4051	8923
EBIT (USD)	750	12413	4051	8361
<b>COMBINED FIRM</b>				
EBITDA (EUR)	1696	21298	22698	-1400
EBIT (EUR)	1246	20621	22698	-2077

(Source: Own contribution)

## Synergies

Synergy is the additional value that is generated by combining two firms this is now examined more in details by Appling (Damodaran, The Value of Synergy, October 2005) framework for valuing synergy. First is the operational synergies identified which includes synergies from economies of scale, increasing pricing power and high growth potential. Hereafter will the financial synergies be examined which could stem from tax benefits, diversification, higher debt capacity and better uses for excess cash.

### WACC Combined firm

Before assessing the synergies gained from merging the two companies it is first necessary to conduct a calculation of the WACC for the combined firm. To do this one first needs to find the unlevered beta for the two firms. For Bombardier this is already done, and it is set to be 0,85 in accordance with the industry average unlevered beta. For Alstom one will need to calculate the unlevered beta using below formula, as we until now only have calculated the levered beta.

$$\text{Unlevered beta} = \frac{\text{Beta levered}}{(1 + (1 - \text{Tax rate}) \cdot \left(\frac{\text{NIBL}}{\text{EQUITY}}\right))}$$

When inputting the values into the formula the unlevered beta for Alstom can be calculated to be 0,80 given the capital structure and tax rate of 34,43% in 2018, using book values. The increase in beta for Alstom from 0,68 to 0,80 make sense as Alstom has a net cash position or in other words negative net debt. The volatility in stock returns is actually lowered by the effect of having a net cash position which also can be seen from the levered beta of 0,68, this is due to the fact that the value of cash isn't changing significantly. Normally the unlevered beta would be lower than the levered beta if the company has positive NIBL, as debt are adding leverage to the stocks returns and hereby volatility. This can also be noticed when relevering the beta for Bombardier, which unlevered has a beta of 0,85, which afterwards increases to 2,26 in 2018, because of a high debt to equity ratio. Relevering the beta can be done by using the below formula.

$$\text{Levered beta} = \text{Unlevered beta} * (1 + (1 - \text{Tax rate}) \cdot \left(\frac{\text{NIBL}}{\text{EQUITY}}\right))$$

After the unlevered beta's are computed the weighted unlevered beta needs to be calculated based on the calculated enterprise values for the two firms. Below formula is used, where B = unlevered beta.

$$\text{Unlevered beta}_{\text{Weighted}} = \frac{EV_{\text{Alstom}}}{EV_{\text{Combined}}} \cdot B_{\text{Alstom}} + \frac{EV_{\text{Bombardier}}}{EV_{\text{Bombardier}}} \cdot B_{\text{Bombardier}}$$

This results in a weighted unlevered beta of 0,82. Hereafter one needs to relever the unlevered beta, this is done by using the expected debt to equity ratio of the combined firm and therefore is the before mentioned formula for calculating the levered beta used.

As WACC is based on market values the debt to equity ratio is calculated based on the estimated market values from the DCF model. This gives us a WACC of 3,91% which will be held constant in the future period for the combined firm where a constant debt to equity ratio is forecasted for the whole period.

### Operating synergies

Economies of scale will be one of the possible synergies that will arise as part of the merger. As the two firms combined it is expected to become more cost efficient. There is expected to be cost savings from combining operations, which will lead to a higher operating margin. Moreover, there should be expected a higher revenue growth as the companies' combined will enable more cross selling and better market penetration because of more geographical reach. In addition, technological resources and knowledge sharing from Bombardier and Alstom is expected to complement each other improving their current and future product portfolio, eventually leading to a better ability to serve current and future customers.

### Financial synergies

Alstom will finance the acquisition with approximately 5bn euros in equity and the remainder with debt (Alstom, Acquisition of Bombardier Transportation: accelerating Alstom's strategic roadmap, 2020). After the acquisition Alstom still has positive NIBL (as combined firm), however it would have been reduced by around 1.2m EUR. The higher debt ratio will result in a lower cost of capital because of better utilization of the tax shield advantage by having debt. Another possible advantage which will arise as part of the acquisition would be the cash slack which Alstom has available also as a combined firm. Because this will enable them to invest in projects which otherwise would have been rejected by Bombardier because of limited cash. Thereby enabling the combined firm to grow faster than as separate firms.

## Forecast assumptions combined firm

The forecast assumptions can be summarized in below table for the combined firm.

Fore cast assumptions	2019	2020	2021	2022	2023
Revenue growth		1,0%	2,5%	2,4%	2,4%
EBITDA/REVENUE	10,2%	10,2%	11,0%	10,9%	10,9%
Depreciation/intangible and tangible assets	8,3%	8,3%	8,9%	8,8%	8,7%
Interest	-6%	-6%	-6%	-6%	-6%
Effective tax rate / Statutory tax rate	34,43%	34,43%	34,43%	34,43%	34,43%
Intangible and tangible assets/revenue	37%	37%	37%	37%	37%
NWC/revenue	-17%	-18%	-18%	-18%	-18%
NIBL/IC	-26%	-26%	-26%	-26%	-26%
<b>Other items:</b>					
Other income/(exper % of revenue	0,8%	0,8%	0,8%	0,8%	0,9%
Share in net income % of revenue	-1,1%	-1,1%	-1,1%	-1,1%	-1,2%
Net profit from disco % of revenue	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%
Operating dirty surpl % of revenue	1,1%	1,1%	1,1%	1,1%	1,2%
Financial dirty surpl % of revenue	0,2%	0,2%	0,2%	0,2%	0,2%
<b>Special items</b>	0,59%	0,59%	0,60%	0,61%	0,61%
<b>Other comprehensive income</b>	0,37%	0,37%	0,38%	0,38%	0,39%

The method for estimating the different items was mainly calculated based on adding all values together for the firms both from the proforma statements. However, there is some exceptions such as the statutory tax rate which is kept as the same as Alstom.

Furthermore, there is made a positive adjustment of NWC/REVENUE which has a significant impact on the capital structure, this was done in order to achieve the desired debt to equity ratio given that Alstom acquired Bombardier for 6,2 billion euros and financed 5 billion with equity from investors and 1.2 billion euros with debt (Alstom, Acquisition of Bombardier Transportation: accelerating Alstom's strategic roadmap, 2020). This led to an equity position of 4,1 billion euros and -0,8 billion euros in NIBL. In order to get tangible and intangible assets + NWC to equal the invested capital of the firm with the new structure the difference in IC, which was 2,6 billion euros. Which presumably was because of the high operating liabilities which Bombardier has, why it seems reasonable to adjust NWC/REVENUE to more normal levels in comparison to Alstom's normal levels of NWC/REVENUE of 25% the 18% doesn't seem too far off.

Now the last two components which haven't been discussed are revenue growth and the EBITDA margin. After having discussed the possible operational synergies and financial synergies it is now the time to incorporate these assumptions into the valuation. The operational synergies as before mentioned would lead to a possible higher margin in the future. Also seen in relation to the fact that Bombardier's EBITDA margin is higher than Alstom, I don't seem unreasonable that this synergy could be obtained in the future.

Therefore, is the future EBITDA/REVENUE starting from 2016-2018 adjusted with 0,8% increase. Furthermore, there it is expected that the firms combined would be better able to grow their sales which would result in an increase in revenue from 2016-2018 of 0,5% on top of the revenue growth already forecasted for the individual firms of the.

	2019	2020	2021	2022	2023	
<b>DCF Model</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Terminal</b>
FCFF	554	686	565	584	601	607
WACC after tax	3,36%	3,36%	3,36%	3,36%	3,36%	
WACC after tax - adj for default risk	3,91%	3,91%	3,91%	3,91%	3,91%	3,91%
Discount factor	0,962	0,926	0,891	0,858	0,826	
Present value of FCFF	533	636	503	501	496	
SUM PV of FCFF	<b>2670</b>					
Value of FCFE in Terminal Period	<b>20879</b>					
Estimated enterprise value (market value of equity)	<b>23548</b>					
Cash	-850					
Estimated enterprise value with synergies	<b>22698</b>					
Estimated enterprise value without synergies	<b>10601</b>					
Value of Synergy	<b>12098</b>					
EV/EBITDA - with synergies	20					
	<b>2018</b>					
Increase in value due to using normal WACC Bombardier	4544					
New Estimated enterprise value with synergies	18154					
New Estimated value without synergies	15145					
Value of Synergy	3010					
EV/EBITDA - with synergies	16					

At first glance the estimated enterprise value of 22,6m seems unreasonable high due to the fact that this would suggest that the value of synergies would be 12m euros. However, the explanation relates to the correction of Bombardiers WACC when conducting the standalone valuation, because of their high default risk they achieved a very low valuation although they actually according to the multiple analysis should have an higher valuation than Alstom due to the high EBITDA margin. In the combined firm Bombardier's would yield significant benefits from being part of a firm whom aren't having a high default risk, why the combined firm is valued significantly higher than just adding the standalone valuations. Alstom expectations to the synergies created can also be seen from their analyst presentation regarding the acquisition of Bombardier. They are expecting to an positive NPV of synergies of 3 billion euros (Alstom, Acquisition of Bombardier Transportation: accelerating Alstom's strategic roadmap, 2020). This suggest that the value of synergies overvalue with 9b euros. However, this can be explained by the looking at the standalone valuation for Bombardier, where if we didn't adjusted for default risk would end up with an valuation of much higher valuation due to the high default risk. It's therefore seems to be necessary to adjust the the total calculated enterprise value of the combined firm with the

pricing error as (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013) explains it. The difference in the standalone valuation of using the adjusted WACC after tax with the normal WACC after tax not including default risk is estimated to be 3 billion euros. Hereby if we sought out to find a more realistic enterprise value the value of the combined firm synergies, one could subtract the 4,5 billion euros from the estimated 22,6 billion euros to obtain an approx enterprise valuation. Hereby would the enterprise value be 18,1 billion euros of the combined firm as we have concluded that it shouldn't include the synergies obtained from Bombardier's having a high default risk. Moreover, the estimated enterprise value without synergies also needs to be corrected, and here the difference of 4,5m is added to the total in order for the EV without synergies to disregard the default risk of Bombardier. Hereafter it is now possible to calculate the value of synergy cleansed from the high default risk which has arisen from Bombardier, this gives us an estimated value of synergy of 4,8 billion euros and EV/EBITDA of 16. These estimates seem reliable in practice, however using the framework from (Koziol, A simple correction of the WACC discount rate for default risk and bankruptcy costs, 2013) and (Damodaran, The Value of Synergy, October 2005) combined suggests a much higher valuation. The EV/EBITDA of 16 still seems a bit high as well as the value of synergies, as Alstom only expects an EV/EBITDA of 14 after synergies is incorporated into the operations (Alstom, Acquisition of Bombardier Transportation: accelerating Alstom's strategic roadmap, 2020).

## Conclusion

In order to value the synergies in the acquisition of Bombardier's train business the Damodaran-framework has been used, hereby carrying out stand-alone valuations of the two companies. With the intention of estimating a fair enterprise value an in-depth analysis of the train manufacturing industry is conducted and firm specific factors are identified. The strategic analysis covered the strategic value drivers whereas the financial analysis covered the financial value drivers. The analysis concluded that Alstom and Bombardier shared some of the same sustainable competitive advantages and further concluded that there exist lots of different positive conditions for growing their future revenue giving the positive outlook on the industry.

Moreover, the case study concludes that the calculated value of synergies using the combined framework of Damodaran and Koziol for adjusting default risk for companies,

estimates a very optimistic valuation of the combined firm with synergies. This significant increase in value which arises as part of Bombardier having a default risk of 19% overestimate the calculated synergies with 10 billion euros in comparison to Alstom's own expectations of achievable synergies of 3 billion euros. After correcting the calculated EV with and without synergies with the effect of using Koziol's framework the calculated synergies were estimated to 3 billion euros, which seems representative in relation to Alstom's own expectations.

## Evaluation

From the conclusion of this case study it is apparent that the calculated value of synergy is too optimistic if one assume that the default risk of Bombardier aren't transferred to the acquiring company. Due to the limitation of this study and the financial numbers available at the point of time of when this study was conducted, the numbers for 2019 aren't studied, as Alstom financial numbers of 31/3/2020 wasn't publiced when the research started. This has significant influence as this also means that the analyzed period was chosen to be 2014-2018 Instead of possible period of 2015-2019. Bombardier's negative results in 2019 for their train business is therefore not incorporate into the expectations of the case study, however theses circumstances are present in Alstom's value estimate of possible synergies of 3 billion euros. This could suggests that calculated synergies for this case study actually should be even higher given the higher EBITDA margin which is forecasted in this case study. Lastly, COVID19 has been an factor that have been incorporatted into the revenue forecast of the companies through the inclusion of the weighted real GDP growht rate from the different regions. However, there aren't made any other corrections in regard to other aspects of this influential factor. One could argue that COVID19 will have increasingly more influenced on the future revenue growth of the analyzed companies than determined by this study. However, in practice this haven't been studied in this case study. This was kept out of the analysis as it seemed to be hard to quantify how COVID19 in other aspect of the business could effect the valuation of the companies.

## Perspective

The motivation for engaging in M&A activities is because of the famous  $1+1=3$  equation. However, often is the promised synergy not delivered in many cases (Damodaran, The Value

of Synergy, October 2005). Also, there is persistent evidence that shows that although if synergies are created, the acquiring firm's stockholders get almost none of the benefits of the increased value, they would in most instances overpay for the synergies (Damodaran, The Value of Synergy, October 2005). This can be related to numerous factors such as managerial hubris, bias in the estimation process and the failure to plan for synergy. The target firm's stockholders would often be the clear winners as they will earn significant returns both around the announcement of the acquisition and the weeks leading up to it (Damodaran, The Value of Synergy, October 2005). This could suggest that the calculated synergies for Alstom are subject to change and should be treated with care although there is used a theoretical framework that should increase the reliability and validity of the results. The quantification of the synergies is still very sensitive and would in most cases not be delivered as promised when looking at the evidence from the literature. In order to provide this case study with another perspective one could for future research examine the success of the acquisition of Bombardier by looking at the factors for a successful merger as described by (Damodaran, The Value of Synergy, October 2005).

Moreover, the literature on synergies shows that merges of equal size firms have a lower probability of succeeding than acquisitions of a smaller firm by a much larger firm (Damodaran, The Value of Synergy, October 2005). This could be due to cultural clashes that are inevitable when two large firms come together (Damodaran, The Value of Synergy, October 2005). This could be an area which was further analyzed in order to provide the reader with an additional perspective of this case study. As Alstom and Bombardier's train business can be assumed to be of equal size when looking at their value of revenue and assets.

Additionally, the literature shows that cost saving merges with concrete and immediate savings has better chances of delivering the promised synergies than synergies based on revenue growth (Damodaran, The Value of Synergy, October 2005). Hereby another perspective on the acquisition of Bombardier could be to look at the significance of this proposition in practice, by evaluating the future success of cost saving synergies in relation to the growth synergies.

This case study concludes that the combined framework of Damodaran and Koziol will overestimate the value of synergies. Further research could therefore go more into details

about how these two frameworks could be combined in other ways in order to value synergies more accurately in acquisitions. Where default risk and bankruptcy costs have significance influence on standalone valuations of the companies, but where default risk and bankruptcy costs aren't transferred to the acquiring company. The combination of the frameworks doesn't seem to offer an possibility for an accurate estimation without an correction of the value arising as part of adjusting the for default risk in Bombardier. Future research within this area could therefore be relevant.

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