Equity Valuation Using Discounted Cash Flow Method

- A case study: Viking Line Ltd

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Abstract:
The value of an asset is the future cash flow it can generate discounted at an opportunity rate that reflects the risks of the asset. Thus, the discounted cash flow (DCF) method is widely used to estimate the true value of an asset. On the stock market, the price of an equity or a stock determined by the market may differ from its true value to the extent that it is overvalued or undervalued. In that belief, the investment theory suggests to buy or hold a stock if it is undervalued and not to buy or sell it if it is overvalued.
The purpose of this study is to evaluate the fair value of stocks from Viking Line Ltd by conducting fundamental analysis on the financial performance of the company period 2012-2016. The aim is to find out if Viking Line Ltd is a good investment by comparing its fair value with the current stock price. The valuation was limited to applying only to public equity, employing only DCF method using FCFF model with historical data, and investment potential is determined solely on estimated value per share. Within the limitations, the author found the estimated value per share was €23.6, which was higher than the market price of €20.5 on March 31st, 2017 when the valuation was started. Hence, the conclusion was that Viking Line was undervalued and investing in the company would be profitable. The study aims to provide a reference in valuating Viking Line stock price and a benchmark to compare with results from other researches to assist investors in making investment decisions. Furthermore, the research can be considered as a guide line of stock valuation, more specifically, using DCF method for readers who take an interest in equity investment.

Keywords:	Viking Line, equity valuation, discounted cash flow (DCF), free cash flow to firm (FCFF)
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ABBREVIATION

BSR: Baltic Sea region

CAGR: compounded annual growth rate

CAPM: capital asset pricing model

CFO: cash flow from operation

CoS: cost of sales

DCF: discounted cash flow

Dep: depreciation

EBIT: earnings before interest and tax

EBITDA: earnings before interest, tax, depreciation, and amortization

ECAs: Emission Control Areas

EMH: efficient market hypothesis

FCFF: free cash flow to firm

FCFE: free cash flow to equity

FCInv: fixed capital investment

Int: interest expense

LNG: liquefied natural gas

MDO: marine diesel oil

MoS: Motorways of the Sea

NCC: non-cash charges

NI: net income

NRFR: nominal risk-free rate

NWC: net working capital

RFR: risk-free rate

RRFR: real risk-free rate

SG&A: selling, general and administration

WACC: weighted average cost of capital

1 INTRODUCTION

Does the price of a listed stock genuinely reflect the intrinsic value of the issuance company? The efficient market hypothesis (EMH) created by Eugene Fama in 1970s stated that in the capital market in its strongest form of efficiency, stock prices follow a "random walk" that is independent of past performance and instantly reflect all available information. Hence, investors would not be able to achieve superior return than the average return of all market participants, they cannot beat the market (Fama, 1970). However, there has been studies and evidence showing the market is not always efficient and from time to time, it does allow anomalies to occur.

Throughout the history, there were times that the market made errors resulted in financial crisis, popular of which are "the great depression" in 1929-39, "the Black Monday" in 1987, "the Internet Bubble" in 1990s, the financial crises of 2008, etc. Many studies and researches conducted in the attempt of seeking the explanation for those incidents from DeBondt, Werner F. M and Richard Thaler (1995), Eugene Fama (1998), Hersh Shefrin (2000), etc. suggested the theory of behavioral finance. The general idea of behavioral finance is that investors are not always rational and their actions depend on attitudes toward risk and beliefs about probabilities, which causes a deviation in market prices from the intrinsic values (Brealey, Myers, & Allen, 2011). Although the deviation only last for a short time and the market will eventually correct itself, it gives incentive to investors to exploit these temporary efficiencies to make profit.

Hence in a certain period, a stock can be undervalued if its market price is below its intrinsic or fair value; overvalued if market price is above its fair value; and true to value if the two values are approximately the same. To determine a fair value of a stock, an analyst must consider the financial performance and the management of the issuance company as well as take into account the factors exist in the industry in which the company operates. By comparing market price with fair value, one would decide or give advice whether to buy, sell or hold a stock.

This research will provide a fundamental analysis of Viking Line Ltd. The company

was chosen because of its well-focused business operation. For the sake of simplicity in demonstrating stock analysis, it is good to start with a single-business-line company. Moreover, Viking Line is one of the biggest player on its field in Baltic region in general and Finland in particular.

1.1 Research aim, questions and significance

The purpose of this study is to evaluate the fair value of stocks from Viking Line Ltd by conducting fundamental analysis on the financial performance of the company period 2012-2016. The aim is to find out if Viking Line Ltd is a good investment by comparing its fair value with the current stock price.

The research is significant since an intrinsic value of a company is one of the key factor in determining its potential as an investment. It can be served as a reference in valuating Viking Line stocks and a benchmark to compare with results from other researches. An industry analysis of maritime transport in Baltic Sea region conducted in this paper will provide an overview and expected outlook of the industry. Together they help assisting the investors in making decision regarding investing in the industry, in general or the company, in specific. Furthermore, the research can be considered as a guide line of stock valuation, more specifically, using DCF method for readers who take an interest in equity investment.

The research question involved in this study is: Is Viking Line Ltd undervalued, overvalued or true to value at the current stock price (March 31st, 2017)?

The sub-research questions are subject to be answered through the study:

- What is the outlook for the maritime transportation (passenger & cargo) market in the Baltic Sea region?
- How will the company perform in the next 3 years?
- How much is the cost of capital (WACC) of the company?
- What is the fair value of Viking Line Ltd?

1.2 Limitations

First, this research will solely compare the estimated fair value of Viking Line Ltd with its current market price to evaluate the investment potential. Hence, a good investment, particularly in this paper, is when fair value is higher than the current market price while the other way around indicates a bad investment. In reality, analysts must take into consideration other factors such as associated risks, stock liquidity, free float rate, etc. to provide a thorough and accurate equity analysis.

Second, the method for stock valuation in this research is restricted to Discounted Cash Flow (DCF) only, which is most common and widely used among analyst society. In fact, there are many methods developed to valuate a stock value and each has distinct advantages and disadvantages. Analysts often combine different methods to seek the optimal answer since stock valuation is an elusive process that involves a lot of assumptions and uncertainties. Moreover, the analysis conducted in this paper solely based on data retrieved from the annual reports of the company. Other information regarded the management quality and corporate governance is neglected.

Finally, Viking Line Ltd is publicly traded, therefore, the method employed in this research should only be used to this type of company. Other types of equity in the capital market are not subjected to be investigated for this project.

1.3 Research Structure

The structure of this paper is divided into two main parts: the literature review and the empirical part. The literature review follows a general-to-specific pattern which starts with investing fundamentals and gradually comes to equity valuation. Readers will be familiarized with the concepts of risk and return, tools to measure them in terms of investment, and different approaches to valuate an asset. In addition, there will be an extensive overview of the Free cash flow to firm (FCFF) model, which is the key mechanism for the empirical part.

The empirical part in this thesis mainly focuses in the valuation of Viking Line using

the FCFF model. In the beginning of this part, an analysis of the cruise and ferry industry in the Baltic Sea Region (BSR) is provided as a foundation of the valuation process beside the past performance of the company. Then, the company analysis will illustrate how the valuation process is conducted, begins with a brief overview of Viking Line and shows the rational, interpretation as well as the estimated results towards the end followed by a short discussion explaining the reliability of the results. Lastly, the author summarizes what has been presented in the paper and suggests further research to improve the estimated results.

2 METHODOLOGY

The focus of this study is to estimate the fair value of Viking Line Ltd. Therefore, financial data extracted from annual reports of the company will be the foundation for the analysis. Data is retrieved from annual reports of the five most recent financial years, which is from 2012 to 2016, from the company's website. In which, quantitative data regarding the financial performance of Viking Line is extracted from the financial statements. The author will also take into consideration any qualitative data regarding the company's management, strategies and goals presented in the reports. In addition, market data from financial websites such as Nasdaq Nordic will be used for further analysis. These data consist of monthly prices of Viking Line's stock and the Nasdaq OMX Helsinki All-share Index in the period of five years, and the monthly yield of Finnish 10-year bond, which are used to estimate the company's weighted cost of capital (WACC).

Other secondary data and information related to the cruise-ferry industry in the Baltic Sea Region is gathered from past researches and available reports to conduct industry analysis.

As mentioned before, the method for stock valuation in this paper is the discounted cash flow (DCF) method. A literature review of this method will be presented in the Literature Review section below. Specifically, the inputs for the DCF model are the company's forecasted free cash flow to firm (FCFF) and weighted average cost of capital (WACC).

Financial model

For the FCFF valuation, a financial model is built based on data from financial statements of the company. The models can be divided into three main parts: Input, Breakdown, and Forecast. The input section is primarily a replication of the financial statements in the chosen period. The breakdown section picks the vital elements from the financial statements: Sales revenue, Working Capital, Depreciation schedule, and Interest-bearing Liabilities; and investigates even further to forecast their changes in the future. Forecast section represents the company's financial statements in the coming periods, in this case, from 2017 to 2019 and from 2020 forward. The first period is separat-

ed into three single years while the latter is presented as an average for the whole period. The reason for doing in such way is to be as precise as possible in forecasting, that is breaking down the forecasted period into individual financial years. The number of forecasted individual years is three but not higher, nevertheless, is because increasing the number of individual years at this point would not significantly improve the precision of the estimated results. The longer period of forecasting, the less accurate the results would be. Therefore, it is rational and more efficient to make forecasting specifically for every year for a short period, in this case three years, and then assume an estimated average for the rest. There is one row at the end of the balance sheet worksheet, which shows the difference between total assets and sum of total equity and total liabilities, to check if the model is correctly built. If the model is correctly built, the values of this row in every year should be zero to indicate that total assets and sum of equity and liabilities are balance, which is the essence of a balance sheet.

Microsoft Excel is used to build the financial model.

Capital asset pricing model (CAPM)

To estimate the company's WACC, the capital asset pricing model (CAPM) is employed. A literature review for the model will be presented in the Literature Review section below.

Data regarding the maritime transport industry is analyzed using desk research approach. Relevant information from past researches will be gathered together to draw the consensus view. Based on the industry analysis as well as the data obtained from Viking Line's annual reports, the author will make assumptions and forecasts of the future performance of the company. In addition, there will be calculations using statistical and financial mathematics to estimate the fair value of the company. The value per share is then derived from the company's value and is put into comparison with the market value on March 31st, 2017, when the valuation is started. The result will be interpreted as one of three following scenarios:

(1) The company is undervalued if its fair value is higher than its market value
(2) The company is overvalued if its fair value is lower than its market value
(3) The company is fairly valued if its fair value equals to its market value

3 LITERATURE REVIEW

3.1 The investment setting

When current earnings exceed current spending desire, one can choose to either keep the excess as saving and receive the exact amount in the future or give up his or her immediate possession in exchange for a larger sum after a certain period. Hence, investment is defined by Reilly and Brown (2003) as the current commitment of dollars for a period to get future payments that will compensate the investor for the time value of the funds or the opportunity cost, the expected rate of inflation and the uncertainty or risk of future payments. The compensation, which is often described as a return on the initial dollar amount invested, is called the investor's required rate of return. This is the minimum rate of return an investor accepts as a compensation for deferring consumption. (Reilly and Brown, 2012)

3.1.1 Risk & return

Return is an incentive for making investments. It can be measured as the total gain or loss to investors over a certain period and often presented as percentage return on initial investment. Realized return is the return which has been earned while expected return is one which investors anticipate to receive over a certain period of investment and it may or may not occur. Investors predict expected return based on the realized return in the past. In terms of equity investment, return consists of the dividends and capital gain or loss at the time of sale of stocks. Typically, required returns are higher for riskier investments. (Omisore, Yusulf and Christopher.I., 2012)

In investment context, risk is the uncertainty of future returns. In other words, it represents the possibility that the actual return from an investment will differ from its expected return (Omisore, Yusulf and Christopher.I., 2012). Similarly, risk regarding to a company is the possibility that the actual outcome of a financial decision may not be same as anticipated. Hence, the risk of an investment can be statistically measured by variance and standard deviation of returns. The larger the variance or the more variation in returns from an investment, the riskier the investment is.

3.1.2 Risk-free rate & risk premium

The required rate of return is made up from interest rates which are influenced by three variables mentioned above: the opportunity cost of the investment, the expected inflation rate, and the uncertainty of future payments. The real risk-free rate (RFRR) is the basic interest rate derived from the opportunity cost, the benefit or return of alternative investments that an investor gave up for a certain investment, assuming there is no inflation and uncertainty about future payments. If inflation is taken into account beside opportunity cost, the RFRR becomes the nominal risk-free rate (NFRR). The NFRR is derived from the RFRR as follow:

$$\textbf{NRFR} = [(1 + \textbf{RRFR}) \times (1 + \textbf{Expected Rate of Inflation})] - 1$$

A risk-free investment is one that investors are certain about the amount of future payments and when they will be made. In this case, investors only ask for a rate of turn equals to the risk-free rate. Since inflation almost always exist, the risk-free rate (RFR) is often expressed as the NRFR. This is also applied in this paper. Government treasury bonds are typically considered as risk-free. If there is uncertainty about the expected return, investors will demand a higher rate of return and the difference between the required rate of return and the risk-free rate is called risk premium (RP):

$$\textbf{Required rate of return} = \textbf{RFR} + \textbf{RP}$$

(Reilly and Brown, 2012)

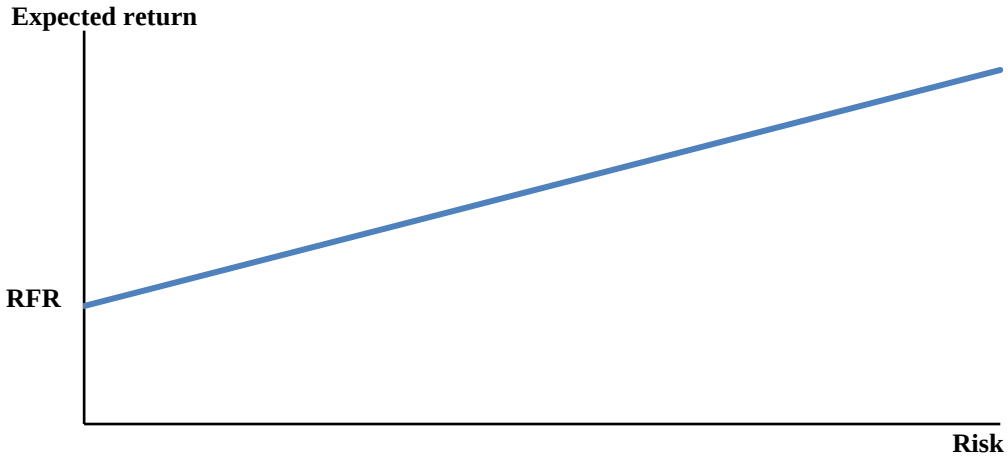

Figure 1. Risk & Return Relationship (Reilly and Brown 2012)

3.2 Market portfolio theory

Since the research in this paper will not directly employ the Markowitz's portfolio model but rather its applications, the author will not show the original model but instead point out the implied ideas behind it. Interested readers who would like to have a thorough understanding the theory as well as the models within it can find Markowitz's scientific work in the bibliography section below.

The market portfolio theory, first developed and introduced by Harry Markowitz (1952, 1959), provided a measure of portfolio risk and showed how to build an optimal portfolio. A portfolio, in terms of investment, is a combination of different financial assets and types of investments held by individual investors or managed by portfolio managers in financial institutes. As mentioned before, risk of an investment is considered as the variation of its returns. Hence, it can be measured by the variance and standard deviation of possible future returns from the expected returns (Reilly and Brown, 2012). The variance and standard deviation of an investment's returns in n periods of time are computed as follow:

$$\boldsymbol{Variance = Standard\ deviation^2 = \sigma^2 = \frac{1}{n-1}\sum_{i=1}^{n}(R_i - \bar{R})^2}$$

where:

$R_i = rates\ of\ return$

$\bar{R} = average\ of\ rates\ of\ return\ R_i$

However, risk of a portfolio which consists of multiple individual investments is not simply measured by taking average of each component 's variance or standard deviation. According to Markowitz's portfolio theory, one should take into account the covariance of individual investments when measuring a portfolio risk. Covariance measures the degree to which two variables move together relative to their individual means over time. Hence, a positive covariance means the two variables tend to move together while a negative covariance indicates they tend to move differently relative to their means during the same period (Reilly and Brown, 2012). For two individual investments x and y, the covariance of their returns in n period of times is computed as follow:

$$\boldsymbol{Cov(R_{x,i}, R_{y,i}) = \frac{1}{n-1}\sum_{i=1}^{n}(R_{x,i} - \overline{R_x})(R_{y,i} - \overline{R_y})}$$

where:

$Cov(R_{x,i}, R_{y,i}) = covariance\ of\ R_x\ and\ R_y\ in\ n\ periods$
$R_{x,i} = returns\ of\ investment\ x\ in\ n\ periods$
$R_{y,i} = returns\ of\ investment\ y\ in\ n\ periods$
$\overline{R_x} = average\ return\ of\ investment\ x\ in\ n\ periods$
$\overline{R_y} = average\ return\ of\ investment\ y\ in\ n\ periods$

When interpreting the covariance of returns of two investments, one can only see the co-movements of their variations in return. In order to examine how strong their relationship is, the covariance is standardized by the variability of the individual returns of each investment to yield the correlation coefficient:

$$\boldsymbol{r_{R_x,R_y} = \frac{Cov(R_x, R_y)}{\sigma_{R_x}\sigma_{R_y}}}$$

where:

$r_{R_x,R_y} = correlation\ coefficient\ of\ returns$

$$\sigma_{R_x} = standard\ deviation\ of\ R_x$$
$$\sigma_{R_y} = standard\ deviation\ of\ R_y$$

(Reilly and Brown, 2012)

The correlation coefficient only varies from -1 to +1. A value of -1 indicates a perfect negative correlation while a value of +1 indicates a perfect positive correlation between the returns of two investments. In a perfect correlation, one variable defers from its mean value by a comparable amount of that of the other variable, in either direction from the means. A value of zero means the returns have no linear relationship or uncorrelated statistically. (Reilly and Brown, 2012)

So, the variation of returns of an investment may have the same or opposite movements of that of another investment, or just fluctuates randomly. This means that putting two investments which have a perfectly negative covariance of returns in one portfolio will be less risky than just keeping either one, since the increase in one's return will offset for the decrease in the other's. The return of this portfolio is the sum of each investment's average return weighted with their proportions in the portfolio. By keeping a portfolio with multiple investments, one can reduce the bearing risk while achieving the same desired return. This act is called diversifying. The total risk of a portfolio can be reduced through diversifying but not eliminated. The portion that can be eliminated is call unsystematic risk or specific risk, which is peculiar to each company due to the distinctiveness in their operations and other factors which influence them. On the other hand, systematic risk or market risk is the portion that cannot be eliminated through diversifying. It is based on the fact that there are economy-wide factors that have impact on all businesses (Brealey, Myers, & Allen, 2011). Figure 3 illustrated the relationship between the standard deviation of return or the risk of a portfolio and the number of stocks in the portfolio. According to figure 2, the unsystematic risk decreases as the number of stocks in a portfolio increases to the extent that only systematic risk remains, at which the portfolio becomes the market portfolio.

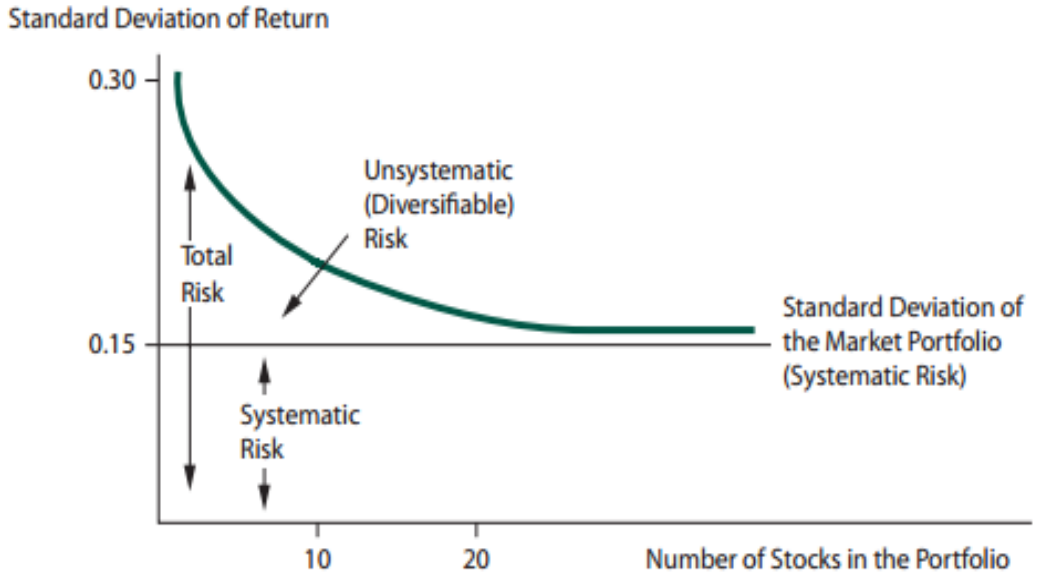

Figure 2. Number of stocks in a portfolio & the standard deviation of the portfolio return (Reilly & Brown, 2012)

3.3 The capital asset pricing model (CAPM)

Based on the market portfolio theory, investors should diversify their investments and aim for the market portfolio in which the total risk equals systematic risk since the unsystematic risk is diversified away. Nevertheless, the theory did not explain how risk and return work for individual risky assets. The capital asset pricing model (CAPM), developed by Sharpe (1964), Lintner (1965) and Mossin (1966), showed how to evaluate risk-return trade-off for both diversified portfolios and individual securities. The mathematical representation for the model goes as follows:

$$\boldsymbol{E(R) = RFR + \beta[E(R_M) - RFR]}$$

where:

$E(R) = expected\ return\ of\ a\ security$

$\beta = the\ beta\ coefficient\ of\ a\ security\ with\ the\ market$

$E(R_M) = expected\ return\ of\ the\ market$

(Reilly and Brown, 2012)

The CAPM redefines the relevant measure of risk from total volatility to only the sys-

tematic risk. Therefore, the new risk measure beta coefficient, denoted as β, calculates the systematic risk of a security compared to that of the market portfolio or the market (Reilly and Brown, 2012). The beta coefficient can be calculated by running a simple linear regression of a security's returns and the market returns in a certain period or by using the following formula:

$$\boldsymbol{\beta = \frac{Cov(R, R_M)}{Var(R_M)}}$$

where:

$$Cov(R, R_M) = the\ covariance\ of\ returns\ of\ a\ security\ and\ the\ market$$
$$Var(R_M) = the\ variance\ of\ returns\ of\ the\ market$$

The CAPM once again expresses the expected return as the sum of the RFR and the expected RP. Nevertheless, the model is simplified by employing the overall market risk premium $[E(R_M) - RFR]$ and adjusting it according to the riskiness of a security relative to the market, which is captured by the beta coefficient, rather than calculate the risk premium for every security (Reilly and Brown, 2012).

3.4 Equity valuation

3.4.1 Theory of Valuation

A valuation of an investment is the process of estimating its value which represents the present value of its expected returns during the invested period. An equity or stock valuation specifically refers to the process of estimating the intrinsic value of common stocks. A commonly accepted theoretical principle in valuating any financial asset is the discounted cash flow methodology (Reilly and Brown, 2012). A value of an asset equals to all the future cash flows discounted at an opportunity rate which reflects the risk of the investment (Pratt, 1998). The valuation process is a fundamental approach to support making investment decision. By comparing the estimated value of an investment to its market value or market price, one can determine to invest or not. The interpretation of estimated intrinsic value of an investment for making investment decision is summarized as follow:

- If Estimated Intrinsic Value > Market Price, Buy or Hold it if You Own It.
- If Estimated Intrinsic Value < Market Price, Don't Buy or Sell it if You Own It.

(Reilly and Brown, 2012)

3.4.2 Valuation approach

Since a value of asset is fundamentally the expected future cash flows discounted back to the present, valuation process involves uncertainties about the future and therefore, the estimated value will always be subjective and imprecise. Equity valuation models help specifying what to be forecasted and turning it to an intrinsic value estimate. There are three major valuation techniques which are generally applicable and widely used:

1. Asset based valuation
2. DCF valuation
3. Relative valuation

(Froidevaux, 2004)

Asset based valuation is closely associated with value investing developed by Benjamin Graham. The idea is that the fair values of a company's current tangible assets should be the foundation in estimating the intrinsic value of that company. The fair value of an asset is estimated by its reproduction cost which is the cost a competitor would have to incur to enter the business. The reproduction cost reflects the earning power of an asset which might increase or decrease over time, therefore it can be significantly different than the book value or the acquisition cost (Froidevaux, 2004). This approach might be difficult when valuating companies which have a substantial number of intangible asset, for instance Research & Development, which is hard to quantify into monetary value.

In relative valuation, a value of an asset is estimated based on how similar assets are priced in the market. The principle underlying is that similar assets should sell for similar prices. The values of assets or companies first need to be standardized, by converting them into multiples of their earnings, book values, replacement values, or revenues that they generate. Then, comparable companies which have similar cash flows, growth potentials, risk levels, etc. are selected and their multiples are compared with one another to determine their relative adequacy. The four main methods using different multiples that are commonly used to valuate common stocks:

1. Relative to earnings: P/E ratio, PEG ratio
2. Relative to revenues generated: P/S ratio
3. Relative to cash generated: P/EBIT, P/EBITDA, P/CFO, EV/EBITDA ratios
4. Relative to book value: P/B ratio

(Froidevaux, 2004)

The DCF method is primary based on the fundamental principle mentioned above, that a value of an asset is the present value of its expected future cash flow. Mathematically, the principle is expressed as follow:

$$\boldsymbol{V_0 = \sum_{i=1}^{n} \frac{CF_i}{(1+k)^i}}$$

where:

$V_0 = Value\ of\ stock\ in\ period\ i = 0$

$CF_i = Cash\ flow\ generated\ by\ the\ asset/firm\ in\ n\ periods$

$k = discount\ rate$

(Froidevaux, 2004)

The model can be extended to valuate a company considering it as a portfolio of assets. The method then can be approached in two ways: via value of equity or via value of firm. Value of equity represents only the stake of the company that belongs to the common shareholders. In this approach, free cash flow to equity (FCFE), which is the residual amount after all operating expenses, tax obligations, and interest and principal payments, is discounted at the cost of equity which is the rate of return required by equity investors (Damodaran, 2004). On the other hand, free cash flow to firm (FCFF) is discounted at the company's weighted average cost of capital (WACC) to get value to firm in the second approach. This approach is different from the former in which it takes into account the leverage used by the company in financing its business, by replacing FCFE by FCFF – the exact same amount but prior to debt payments – and using WACC – the cost of all financing components, weighted by their market value proportion – as the discount rate instead of cost of equity (Damodaran, 2004). The two approaches are summarized in the table below:

Table 1. Value of equity vs Value of firm

	Value of equity	Value of firm
Model	$V_0 = \sum_{i=1}^{n} \frac{CF_i}{(1+k)^i}$	
Cash flow	Residual amount after operating expenses, tax obligations, and debt payments (FCFE)	Residual amount after operating expenses, tax obligations but prior to debt payments (FCFF)
Discount rate	Cost of equity	Weighted average cost of capital (WACC)

3.4.3 Optimal valuation technique

The three valuation techniques above are the most commonly used by analysts. Each has its own advantages and disadvantages compared to others. Because valuation is an elusive process that involves a lot of uncertainties and the results are often subjective, thus differ from one another, there is no such optimal valuation technique. Analysts often use a combination of valuation methods to better estimate the intrinsic values of assets or companies. In this research, however, the method employed is the DCF method as it reflects the commonly-accepted principle of asset valuation: the value of an asset is the total amount of expected cash flows it can generate, discounted at a rate which reflects the risks of the asset. More specifically, the author chose the approach via valuating the value to firm where FCFF and WACC are the inputs for model. The reason is that this approach, in practice, is more straightforward as FCFF is unaffected by changes in financial leverage (Damodaran, 2004).

3.5 Free cash flow to firm (FCFF) model

3.5.1 Calculating free cash flow to firm (FCFF)

As mentioned before, FCFF is the amount of cash a company generates by running its business after all expenses, tax obligations, and investments are deducted. There are different ways to estimate FCFF, originated by different starting points. An analyst can calculate FCFF by starting with the following items from the financial statements: net income (NC), earnings before interest and tax (EBIT), earnings before interest, tax, depreciation and amortization (EBITDA), or cash flow from operations (CFO) (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.).

Calculating FCFF from NI

$$\boldsymbol{FCFF = NI + NCC + [Int \times (1 - tax\ rate)] - FCInv}$$
$$\boldsymbol{- (+)\ Increase\ (Decrease)\ in\ NWC}$$

where:

NCC = noncash charges

Int = interest expense

FCInv = fixed capital investment

NWC = net working capital

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

The net income appears at the bottom line of an income statement is not necessarily cash since companies can sell their products or services on credits where cash transactions do not occur yet. Therefore, one must make some adjustments to get the FCFF, fundamentally that is adding the actual cash transactions which do not appear in the income statement and deducting noncash charges when calculated net income. Some common **noncash charges** include **depreciation & amortization** – a method to spread the cost of an asset throughout its useful life, restructuring charges, and deferred taxes, which show the difference between reporting income and expenses for accounting and tax purposes. **Fixed capital investment** is the difference between the capital expenditures, which refer to the investment in long-term assets, and the divestment in such assets. FCInv is a cash-related activity which does not appear in the income statement and

hence, should be adjusted in the FCFF calculation. **Net working capital** is a measure of company's short-term financial health, which is the ability to meet short-term obligations. Therefore, it is calculated as the difference between current assets excluding cash and cash equivalents and current liabilities. NWC is a noncash item involved in the calculation of net income in the income statement, therefore should be taken into the formula. An increase in NWC during the financial year should be added back to NI whereas a decrease in NWC should be deducted. The final adjustment is the **interest expense** which is the interest payment companies must pay to their debt holders for cash financing. Since FCFF is prior to debt payments, interest expense should be added back into the formula. It should be noted that only the after-tax interest cost is adjusted since interest expense affects the amount of taxable income which in turn, affects the tax obligations. (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

Calculating FCFF from EBIT

$$\boldsymbol{FCFF} = [\boldsymbol{EBIT}\times(\mathbf{1}-\boldsymbol{tax\ rate})] + \boldsymbol{Dep} - \boldsymbol{FCInv} - (+)\ \boldsymbol{Increase}\ (\boldsymbol{Decrease})\ \boldsymbol{in\ NWC}$$

where:

Dep = depreciation

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

Starting from EBIT does not require to adjust for interest expense since it is before interest and taxes. Nevertheless, depreciation is added back because it was subtracted in calculating EBIT.

Calculating FCFF from EBITDA

$$\boldsymbol{FCFF} = [\boldsymbol{EBITDA}\times(\mathbf{1}-\boldsymbol{tax\ rate})] + (\boldsymbol{Dep}\times\boldsymbol{tax\ rate}) - \boldsymbol{FCInv} - (+)\ \boldsymbol{Increase}\ (\boldsymbol{Decrease})\ \boldsymbol{in\ NWC}$$

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

EBITDA is the earnings before interest, taxes, depreciation, and amortization. Therefore, the depreciation tax shield calculated by multiplying depreciation and tax rate is

added back. It represents the cash amount increased from taxes saved by having depreciation.

Calculating FCFF from CFO

$$\boldsymbol{FCFF = CFO + [Int \times (1 - tax\ rate\}] - FCInv}$$

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

CFO is the cash flow from operations which appears in the cash flow statement. Since it is derived from net income and already adjusted for noncash charges and working capital, only after-tax interest expense and fixed capital investment should be taken into the formula.

If a company uses preferred shares to raise fund beside debt and common equity, further adjustment is necessary to estimate the FCFF. Preferred shares represent ownership in a corporation that is similar to common equity but do not carry voting rights. Therefore, preferred shareholders have priority over common shareholders in which dividends of preferred shares must be paid out before dividends of common shares (Investopedia). In calculating FCFF, preferred shares are treated like debt, which dividends are added back to the FCFF, except that the amount is not tax-deductible (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.).

To forecast FCFF in the future, analysts can choose to either forecast the growth of FCFF as a whole, based on historical data or forecast the components of FCFF. The latter method is more realistic, more flexible and thus, more complicated because it is assumed that each component has a different growth rate (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.). By analyzing and forecasting each component of FCFF, analysts would make more reasonable assumptions as well as have more flexibility adjusting one or more components to see the effect on the value of FCFF.

3.5.2 WACC as the discount rate

WACC is the cost of capital that a company uses to finance for operating its business. Since the goal is to estimate the total value of the company, it is reasonable to use WACC as the discount rate. Cost of capital is derived by summing the cost of debt and equity weighted by their relative proportions in the company's financing structure:

$$\boldsymbol{WACC = w_e \times r_e + w_d \times r_d \times (1 - tax\ rate)}$$

where:

$r_e = rate\ of\ return\ required\ by\ shareholders$

$r_d = rate\ of\ return\ required\ by\ debt\ holders$

$$w_e = \frac{market\ value\ of\ equity}{market\ value\ of\ equity + market\ value\ of\ debt}$$

$$w_d = \frac{market\ value\ of\ debt}{market\ value\ of\ equity + market\ value\ of\ debt}$$

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

Both the weights of equity and debt financing is estimated based on market value. Since the WACC may change over time as the company's capital structure changes, analysts should use target structure weights instead of actual weights (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.). The cost of equity, which is the rate of return required by common shareholders, can be calculated using the CAPM. It will then equal to the RFR plus the RP, which is the net of market return and the RFR, adjusted to the correlation between the company's return and the market return by multiplying with the beta coefficient. On the other hand, the cost of debt represents the required rate of return by debt holders. According to the above formula, it is tax-deductible since the interest payment reduces the amount of tax obligation.

3.5.3 Single-stage vs multi-stage model

The FCFF model can be used as a single-stage or a multi-stage model to better illustrate the different stages of a business and the industry in which it is operating. One of the most common models of an industry's life cycle was presented by Michael Porter in 1980. According to Porter (1980), an industry's cycle has four stages: introduction,

growth, maturity, and decline. In introduction stage, a company must spend huge amount of capital for establishing its business and often results in negative profit. Any profits generated would be reinvested into the company to consolidate for growth. The growth stage is similar to the introduction stage in which the company spends significant amount of capital to differentiate its products or services from competitors and to standardize its operation to obtain economies of scale. Demand in this stage is growing and leads to substantial increase in sales and earnings as well as intense competition among existing players and new entrants. Maturity stage experiences a slowing growth rate compared to the growth stage. Competition is among those big and dominant companies who remain in the industry and there is apparent barrier for new entrants. Companies may have excess cash to pay dividends to shareholders, nevertheless continue to invest to further expand and increase sale volumes. As companies enter decline stage, sales decrease in an accelerating rate. As a result, more companies are forced to exit or be consumed by larger companies through merger & acquisition.

The single-stage model assumes that a company has a stable growth at a constant rate forever and the growth rate is less than the WACC (Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.). Therefore, it should be used in valuating companies in mature industries. The mathematical representation for the single-stage model goes as follows:

$$\boldsymbol{Value\ of\ the\ company} = \frac{\boldsymbol{FCFF_{t+1}}}{\boldsymbol{WACC - g}}$$

where:

$FCFF_{t+1} = expected\ free\ cash\ flow\ to\ firm\ in\ the\ period\ of\ stable\ growth$

g = constant expected growth rate

(Cross-Reference to CFA Institute Assigned Reading #42 - Free Cash Flow Valuation, n.d.)

Multi-stage models capture the idea that a company may have different future growth patterns. Generally, multi-stage models break the future growth pattern of a company into smaller short-term periods before assuming it has constant growth rate. A two-stage model assumes that a company has two growth stages: a high-grow stage in a short amount of time follow by a stable-grow stage in long-term. A three-stage model as-

sumes that a company has two periods of certain growth rates before entering its stable –growth period. The stable-growth period is called the **terminal value** of a company which is calculated using similar formula as in the single-stage model.

4 BALTIC SEA REGION (BSR) CRUISE AND FERRY INDUSTRY

In this part of the thesis, the author provides a brief analysis on the cruise and ferry industry in the Baltic Sea region. The purpose of this analysis is to give a glance on the industry in which Viking Line is operating and will be used as a foundation in forecasting the performance of the company in the future.

The cruise industry is a branch of tourism industry with cruise shipping refers to leisure sea voyages of at least 60 hours to at least 2 port cities, capitals apart from the starting and ending port (Serry, 2014). The cruise industry is a large and fast-growing industry in Europe which have a significant impact on the area's economy. During 2014, there was 42 cruise lines domiciled in Europe, operating 123 cruise ships and 18 non-European lines which operate 60 vessels. In 2014, the European cruise industry generated €16.6 billion of direct expenditures including spending for cruise ship construction, cruise line operation, cruise passenger and crew spending, etc. and created approximately 169.8 thousand of jobs (CLIA Europe, 2015). The cruise market in Europe can be separated into two major markets: the Mediterranean and the Northern Europe markets. The Baltic Sea region (BSR) is part of Northern Europe which includes 9 countries featuring their coastlines along the Baltic Sea. These are: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden (Baltic Ro-Ro & Ferry Yearbook 2013, 2013). The BSR cruise industry is the largest segment of Northern Europe market which generated 5.1 million passenger nights in 2015 (CLIA Europe, 2015). As of April, 2015 there were 34 shipping companies operated in the area.

In the BSR, cruise ferry industry refers to a specific market which provides passenger and cargo shipping domestically or to neighboring countries in the area using high quality ferries and ro-ro vessels. The industry generates significant passenger traffic, for instance, approximately 10 million passengers travel across the Baltic Sea between Finland and Sweden a year (Serry, 2014). Figure 3 shows the top cruise ferry operators in the BSR in terms of passenger traffic in 2012. At a glance, the BSR market seems to have a fierce competition with 34 shipping operators compete to each other. They offer similar maritime services which can be either freight transport by ro-ro vessels, passen-

ger transport by ferries or a combination of both. Thus, the companies do not have much bargaining power as customers can switch to another operator. Nevertheless, since there are as many as 38 ports in the area, which leads to substantial number of routes for cruise operators to operate in, the competition on each route is less intense. In fact, the EU operators has been on a gradual consolidation process since 2000 in which they tend to provide services to local/regional traffic flows and hardly develop their business beyond one region (Brambilla and Martino, 2016). As a result, price for ferry tickets may vary depends on the competitive level of the routes. Other factors influence price of ferry tickets include volatility of bunker prices, type of accommodation, seasonal period, etc. This leads to pricing policy becoming flexible and susceptible to regular change (Brambilla and Martino, 2016).

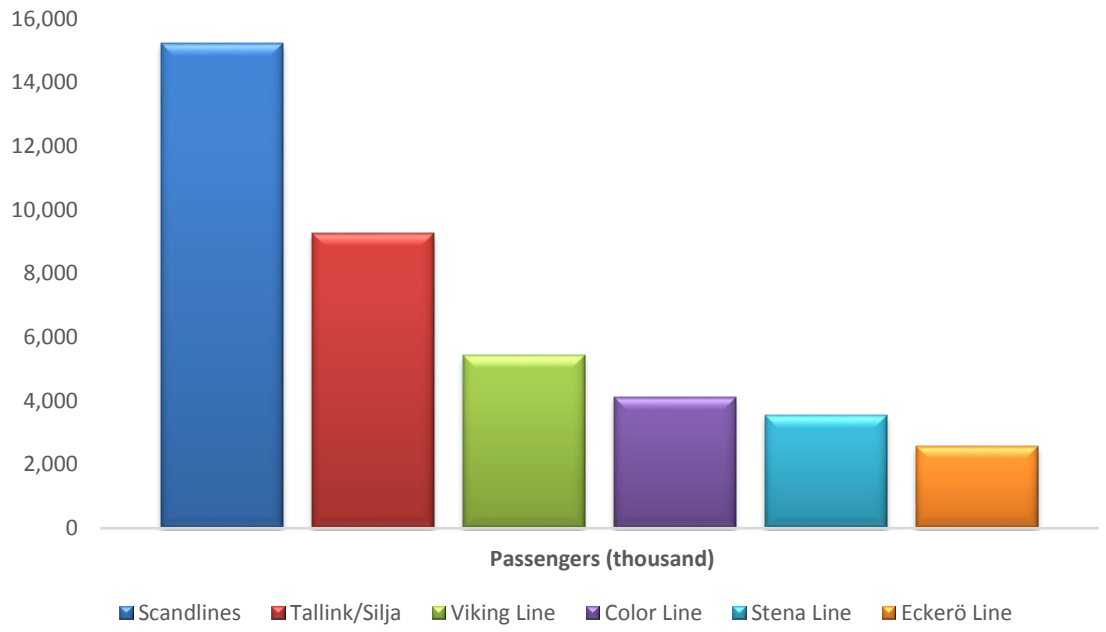

Figure 3. Passenger Traffic Volumes of The Top 6 Ferry Operators in Baltic (2012) (Source: Baltic Ro-Ro & Ferry Yearbook 2013)

The cruise and ferry industry has been influenced by the ending of duty-free regime under EU tax regulation, the competition of low-cost airline carriers and the escalation of bunker prices. In addition, from 2008 the industry was hit by the economic recession and not until 2011 did the volumes of passengers and trailers reach their pre-crisis level (Brambilla and Martino, 2016). Today, performance of operators correlates with the

economic situation of the region in which they operated. Overall the cruise and ferry industry in BSR has a relatively stable demand. According to Harbours Review 2015/1, more than 8.4 million cargo units were carried on board all over Baltic ports in 2014. The total cargo handling of the top 10 ro-ro and ferry ports in the BSR was 4.8 million in 2014, which grew 3.9% from the preceding year. All the ports in the list experienced a positive growth rate in cargo handling over 2013, among which port of Tallinn had the highest growth rate of 6.7%.

Table 2. Top 10 Ro-Ro & Ferry Ports in the Baltic Sea (2014) - Freight Units (Source: Harbours Review 2015/1)

		Port	2012	2013	2014	2014/13 yoy
1	DE	Lübeck/Travemünde	733,234	733,391	744,860	+1,6%
2	SE	Trelleborg	648,991	645,696	670,766	+3.9%
3	FI	Helsinki	501,465	485,816	503,354	+3.6%
4	SE	Gothenburg	480,797	479,528	497,609	+3.8%
5	DE	Rostock	428,205	424,089	444,781	+4.9%
6	DE	Puttgarden	369,871	389,344	412,151	+5.9%
7	DK	Rødby	369,871	389,344	412,151	+5.9%
8	EE	Tallinn	354,300	353,700	377,316	+6.7%
9	DK	Helsingør	365,833	360,840	375,450	+4.0%
10	SE	Helsingborg	422,922	366,082	369,908	+1.0%
		Total	**4,675,489**	**4,627,830**	**4,808,346**	**+3.9%**

In terms of passenger volume, the top 10 ferry ports in the BSR reached a total of 64.5 million passengers in 2014, which marked a slightly decrease of 0.05% compared to 2013 but increased 0.28% from 2012. Helsinki and Tallinn were top of the list with 10.9 million and 9.08 million of passengers respectively, of which Tallinn had the highest

growth of 4.3% over the preceding year. The BSR is an attractive destination thanks to its geography advantage. The area is the only region in the northern Europe that has six capital cities situated on the coasts and the distance between one and another is within overnight sailing. In addition, the region has many to offer as rich culture and history, high safety as well as large portion of the natives can speak English (Serry, 2014). Passengers traffic volumes in the EU grew 12.06% from 718 million to 805 million in the period of 2006-2014, of which the Baltic area had the highest growth rate of 13.75% and an annual growth rate of 1.86% compared to the North Sea and Mediterranean region.

Table 3. Top 10 Baltic Ferry Ports (2014) - Passengers, thousand (Source: Harbours Review 2015/1)

		Port	2012	2013	2014	2014/13 yoy
1	FI	Helsinki	10,608	10,724	10,901	+1.7%
2	EE	Tallin	8,394	8,709	9,081	+4.3%
3	SE	Stockholm	9,025	8,833	8,453	-4.3%
4	SE	Helsingborg	7,841	7,763	7,656	-1.4%
5	DK	Helsingør	7,824	7,721	7,6335	-1.1%
6	DE	Puttgarden	6,001	5,945	6,002	+1.0%
7	DK	Rødby	6,001	5,945	6,002	+1.0%
8	FI	Turku	3,312	3,425	3,257	-4.9%
9	FI	Mariehamn	3,310	3,040	3,024	-0.5%
10	DK	Odden	2,038	2,462	2,525	+2.6%
		Total	**64,354**	**64,567**	**64,536**	**-0.05%**

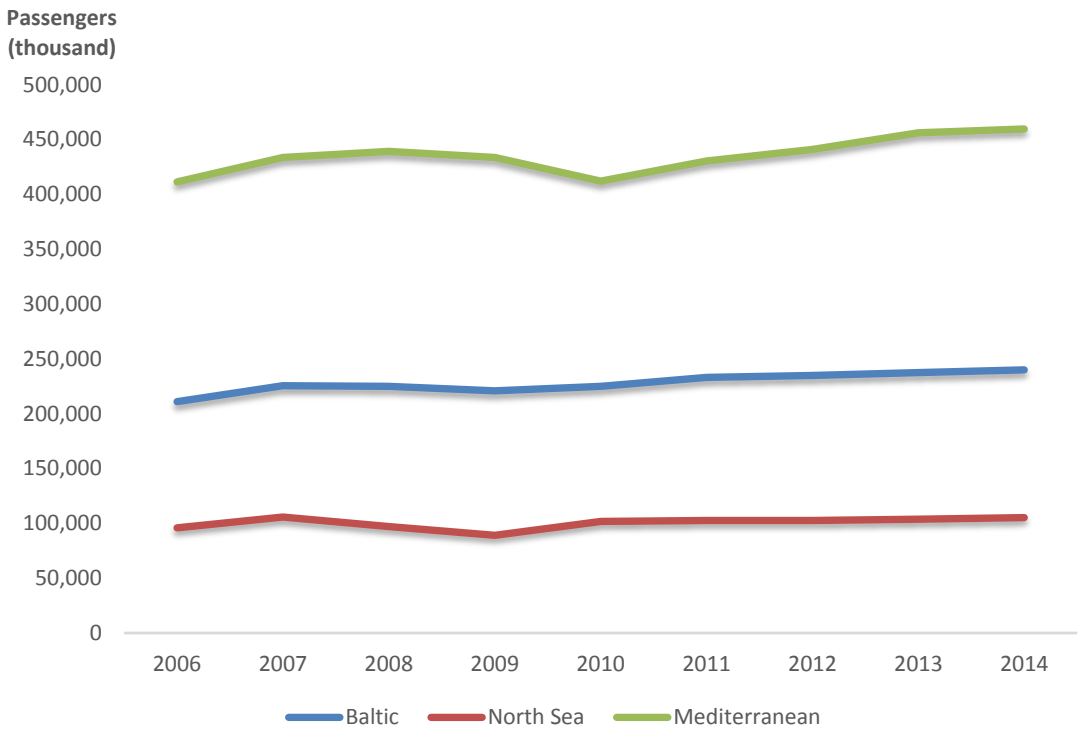

Figure 4. Passenger Traffic Volumes in EU regions period 2006-2014 (Source: Research for TRAN Committee - The EU Maritime Transport System: Focus on Ferries)

Cruise ferry operators in Europe in general and in the Baltic Sea in specific must comply with strict regulations related to safety and environment concerns. The frequently changes in these regulations, especially those related to the requirements about waste and emission, have a significant impact on the industry. One of the most recent and has a big influence is the 0.1% limit of sulfur emission in the Emission Control Areas (ECAs), which include the BSR. It is said to increase operation costs as well as the need of investment for ferry operators as they must switch to more costly sources of energy, such as the Marine Diesel Oil (MDO) or adapt ships to environmental-friendly technology, for instance vessels run by Liquefied Natural Gas (LNG). An effort to comply with provisions related to environment concerns and to develop the Motorways of the Sea (MoS), which include short-sea routes, ports, maritime associated infrastructure and equipment, and facilities, are key drives for technology and infrastructure developments in the industry. In the view of ECAs and MoS, about €1 billion were attributed to projects in which ferries are integrated from 2008 to 2016, of which €306 million are granted by the EU (Brambilla and Martino, 2016). It is anticipated that the ferry industry would continue to develop as ferry becomes an important mean of transportation on the

short-sea routes between neighboring countries as well as on local routes within a country.

In summary, the cruise industry in Europe is major industry which contributes significantly to the area economy. The BSR is the largest market segment in Northern Europe, wherein a specific market specializes in providing passenger and cargo shipping services using ferries thrives. The ferry industry in BSR faced many challenges: competition from low-cost other transport modes, the disappearance of duty-free regime in the EU, the economic recession in Europe as well as the volatility in bunker prices. These incidents formed some distinct characteristics of the industry: there are many companies in the whole region but they tend to focus their operations in a specific area; operating performance is in line with the economic situation where the companies operating in; and pricing policy is flexible and susceptible to regular changes. The industry has been on the track of recovery since the economic recession in 2008, with growing demand thanks to its geographic advantages. In addition, infrastructure and technology in the industry continues to develop to improve efficiency and environmental-friendliness to comply with strict regulations of ECAs. In a nut shell, the ferry industry in the BSR seems to reach its mature stage, yet continues to grow at a steady pace.

5 COMPANY ANALYSIS

5.1 Overview

Viking Line Ltd is a Finnish leading company in providing ferry services in the Northern Baltic Sea. The offering services include cruises, passenger transport, and cargo transport between countries in the area, mainly Finland, Estonia, and Sweden, and between local ports within Finland. Shares of Viking Line Ltd has been listed on the NASDAQ Helsinki stock exchange since 1995. The total number of shares is 10.8 million which aggregates to a total of €1.8 million of share capital.

Viking Line is currently operating a fleet of 7 vessels on 5 different routes. Its main competitors are Tallink/Silja Line, Finnlines, and Eckerö Line in terms of geographic business segment and type of offering services. Of which, Tallink/Silja Line competes with Viking Line directly on three routes: Helsinki-Tallinn, Turku-Stockholm, and Helsinki-Stockholm and has larger market shares. In 2016, the total market share of Viking Line was 33.5% in passenger service and 20.7% in cargo service, which were slightly lower than that of the previous year. Meanwhile, Tallink/Silja held 48% of total market share in terms of passenger service in Northern Baltic Sea in 2016.

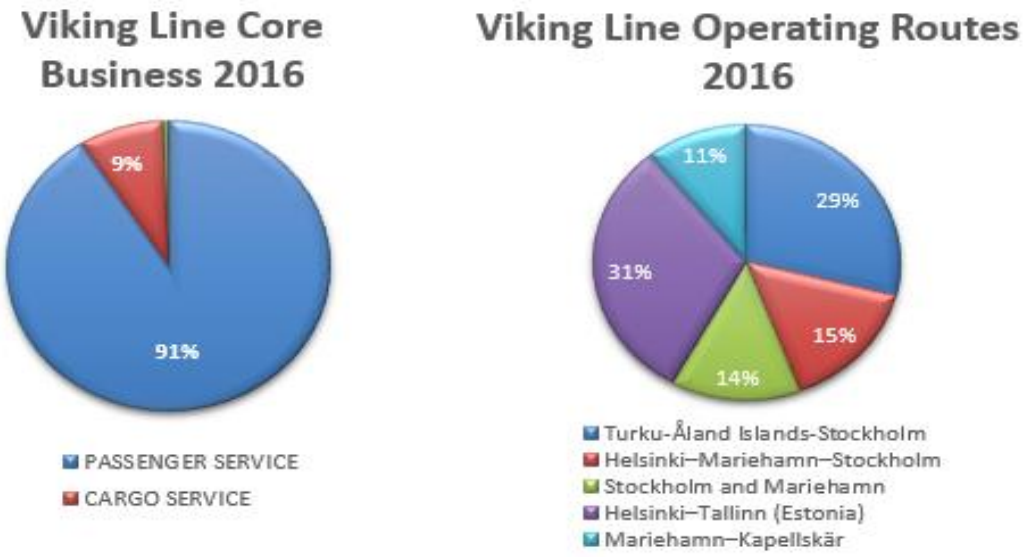

Figure 5. Viking Line core business (by revenues) and operating routes (by passengers) 2016

The performance of Viking Line from 2012 to 2016 was not impressive. Total sales revenue peaked in 2013 at €549.4 million but decreased since then to €519.6 million in 2016. The total growth of sales revenue in the period was modest at 0.68%. Net income increased from €0.8 million to €8.1 million from 2012 to 2016, thanks to reduction in operating expense, which resulted from cheap bunker price since 2014 and an effort of the company in cutting fuel consumption and other operating expenses. Decreases in operating expenses were as well implied by the increases in gross margin and net margin, which are the percentage of gross profit and net profit, respectively, over sales revenue. Net income in 2013 and 2014 was significantly high at €27.5 million and €30.6 million, respectively due to substantial increase in non-recurring profit. In particular, Viking Line recorded a €22.8 million in capital gain from selling ferry Isabella in 2013 and a €27.9 million in investment available for sale after receiving shares from insurance company Försäkringsaktiebolaget Alandia. Therefore, pre-tax core income would be a better illustration of performance from Viking Line operation. It is the operating income of solely the core business of the company, which is related to ferry service for passenger and cargo transport, prior to tax obligations. The amount has been decreased since 2013 with an exceptional peak in 2015 at €17.7 million. It was explained by the company's management team that the deterioration in performance of the company was mainly due to the economic downturn in Finland and the increasing competition within the industry. Nevertheless, return on equity (ROE) increased from 0.56% to 3.41% from 2012 to 2016. This may imply an improvement in efficiency of the operation, especially in cost management and the benefits received from decreasing bunker prices.

Table 4. Financial Highlights of Viking Line Ltd from 2012 to 2016 (Source: Viking Line Annual Report 2012-2016)

Euro million	2012A	2013A	2014A	2015A	2016A
Sales Revenue	516.1	549.4	527.4	530.5	519.6
Net Income	0.8	27.5	30.6	18.8	8.1
Pre-tax Core Income	-0.5	2.9	2.7	17.7	2.2
Revenue Growth %	2.3	6.5	-4	0.6	-2.1

Net Income Growth %	-89.5	3337.5	11.3	-38.6	-56.9
Pre-tax Core Income Growth %			-6.9	555.6	-87.6
Gross Margin %	71	72.6	72	71.1	70.9
Net Margin %	0.2	5	5.8	3.5	1.6
Return on Equity (ROE, %)	0.56	14.34	13.92	8.86	3.41

5.2 Forecasting

In the section, the author will present the assumptions and rational behind them for forecasting Viking Line financial results from 2017 forward. Readers can find the whole spreadsheet model showing the historical input data from 2012 to 2016, forecasted results from 2017 forward, and the valuation process. Of which, results for period from 2017 to 2019 is presented separately for every single year, which shows the difference in growth rates each year while from 2020 forward, financial results are assumed to grow at a constant rate. For better demonstration of the forecasting process, this section will be divided into 3 parts relative to three main components of the financial statements: Income statement, Balance sheet, and Cash flow statement. Each part provides the constituent items need to be forecasted. The row check at the bottom of the balance sheet worksheet shows zero value for every year, which indicates the model was correctly built.

5.2.1 Income statement

The most important item that need to be forecasted in the income statement is apparently the revenue. Revenue of Viking Line comes from its core operating business which is the ferry service, other operating incomes such as rents on properties, and financial income. Other comprehensive income which consists of items affect the net income but do not appear in the income statement also needs to be estimated. Core business consists of passenger service, cargo service and miscellaneous. Revenue from passenger and cargo service was forecasted based on estimated annual growth rate and estimated reve-

nue per passenger/cargo which was calculated by dividing the total revenue of passenger/cargo service by the total number of passengers/cargos. According to the company's management view, number of passengers and revenue from passenger service in 2017 would be higher than that of 2016 due to less dry-docking upgrade and maintenance. Furthermore, Finnish economy is recovering and is expected to improve in the coming year with GDP grow at approximately 1%, consumption continues to grow supported by low inflation and increase in disposable income, according to Bank of Finland, and demand for the service is expected to continue growing at a stable rate. With those reasons, the author expected the number of passengers and cargos would grow 0.61% and 2.86% every year from 2017 to 2019. These rates are the averages of annual growth of the last 3 year. In a similar approach, estimated revenue per passenger and cargo are €73 and €330.5 respectively. Total revenue for each service was calculated by multiplying number of passengers/cargos by the revenue per passenger/cargo. Miscellaneous revenue from core business was assumed to be the same as in 2016 since there had been a sudden drop compared to other years due to some minor business lines might have been cancelled. Other operating income and revenue from rents on properties are average of the last three years since they do not vary much. It should be noted that when taking average for other operating income, the result for 2016 was deducted by €1.5 million of non-recurring capital gains. Financial income was estimated using similar approach as for estimating other operating income. For items in other comprehensive income, the value of investment available for sale was assumed to remain unchanged reflected by zero value for the item while translation differences were assumed to be average of the last three years.

Other items that need to be forecasted in the income statement related to expenses. Cost of sales (CoS) which refers to the direct cost of the core business and selling, general & administrative (SG&A) expense were estimated based on their margin to total sales revenue. Margin of CoS was assumed to equal the average of the last three years while margin of SG&A expense in 2016 was assumed to equal that of 2014, at 63.3% and increase by 0.1 percentage point every year. This was based on the expectation that bunker prices would increase gradually from 2017. Items in financial expenses were assumed to be average of the last three years except for interest expenses on financial liabilities which estimation will be demonstrated in the Balance sheet section. Finally, the

provision for income taxes was estimated based on the effective tax rate which was calculated by dividing the tax provision by the pre-tax income. The estimated effective tax rate was assumed to be the same as in 2016, at 15.6%. This rate would then be multiplied back to the pre-tax income to estimate the future income tax.

Table 5. Assumptions for income statement in forecasted period 2017-2019

	2017E	2018E	2019E
Passenger/cargo growth	Average of last 3 years	Same as 2017	Same as 2018
Revenue per passenger/cargo	Average of last 3 years	Same as 2017	Same as 2018
Miscellaneous revenue	Same as 2016	Same as 2017	Same as 2018
Rents on properties	Average of last 3 years	Same as 2017	Same as 2018
Other operating income	Average of last 3 years	Same as 2017	Same as 2018
Items in Financial income	Average of last 3 years	Same as 2017	Same as 2018
Items in Financial expense (exclude Interest expense)	Average of last 3 years	Same as 2017	Same as 2018
COS margin	Average of last 3 years	Same as 2017	Same as 2018
SG&A margin	63.3%	63.4%	63.5%
Effective tax rate	Same as 2016	Same as 2017	Same as 2018
Investment available for sale	0	0	0
Translation differences	Average of last 3 years	Same as 2017	Same as 2018

5.2.2 Balance sheet

Current assets, non-current or fixed assets, current liabilities, non-current liabilities, and equity are items need to be forecasted in the balance sheet. Current assets and current liabilities were estimated in the working capital worksheet based on days outstanding ratios, except for trade receivables since there is no information about credit sales provided in the annual reports. Thus, trade receivables were estimated simply by a margin on sales revenue. It was assumed that the margin would be the same as in 2016 since the result was higher compared to other previous years. The increase in trade receivables might result from the online sales system on mobile devices being launched in 2016. For trade payables and inventory, the author forecasted based on the days outstanding ratios which measure the average number of days Viking Line keeps its inventory before selling it and the average number of days to pay invoices to its suppliers. The ratios were calculated by dividing the average amount of inventory/trade payables by the daily CoS (CoS divided by 365 days). The ratios were assumed to remain unchanged from that of 2016. Other types of payables were estimated by taking average of results from the last three years.

Table 6. Assumptions for working capital forecasted period 2017-2019

	2017E	2018E	2019E
Trade Receivables/Sales Revenue	Same as 2016	Same as 2017	Same as 2018
Days inventory outstanding	Same as 2016	Same as 2017	Same as 2018
Days trade payables outstanding	Same as 2016	Same as 2017	Same as 2018
Accrued expenses and prepaid income	Average of last 3 years	Same as 2017	Same as 2018
Other payables	Average of last 3 years	Same as 2017	Same as 2018

To forecast the value of fixed assets in the balance sheet, the author made a deprecia-

tion/amortization schedule. According to information provided in the annual reports of Viking Line, the fixed assets are depreciated/amortized using straight-line method, in which the cost or value of the assets is deducted by a constant amount throughout their estimated useful life. The constant amount equals the cost or value of the asset divided by its estimated number of years it can be used to generate profit. The exceptions, however, are the value of building and structures which is depreciated by a fixed percentage of remaining expenditures and value of land which is not depreciated over time.

Table 7. Depreciation methods for non-current assets

	Depreciation method	Estimated useful life (years)	Assumed remaining years
Intangible assets	Straight-line	5-10 years	5
Land	Not depreciated	Value = 0.6 (2017 forward)	
Building and structures	% of remaining expenditure	4-7% (building) 20-25% (structures)	8%
Vessels	Straight-line	20-25 years	13
Machinery & Equipment	Straight-line	5-15 years	4
Renovation costs	Straight-line	10	10

For those assets, which are depreciated using straight-line method, the depreciation/amortization is divided into two components: depreciation/amortization from current ending balance and depreciation/amortization from the amount of FCInv. Depreciation/amortization from current ending balance is constant for each year and equals the ending balance of the asset for the year divided by the its remaining years of useful life, which was estimated based on its ending balance and estimated years of useful life provided in the annual reports. Depreciation/amortization from the amount of FCInv was calculated using the same approach whereas the current ending balance was replaced by

the amount of FCInv and the amount depreciated/amortized in the first year was assumed to be halved. Table shows the depreciation schedule of vessels. On the other hand, depreciation of building and structures was calculated based on a fixed percentage of the ending balance. The FCInv amount for machinery and equipment was estimated at €4 million in 2017 and as an average of values from 2014-2016 in 2018. The author thought this account would be replenished at a certain level, in this case around €5.5 million, to around 8 million and slightly increase in the following years until it reaches the replenishing-required level again. Similar reasoning was applied for the increase of renovation costs. Meanwhile, the FCInv amount for intangible assets in 2017 was estimated by taking average of that from 2012 to 2015. The value in 2016 was exceptionally high which might be due to a significant investment for developing the online sales system, and thus, was excluded from the calculation. The FCInv for other assets were estimated simply by taking average amounts of the last three years.

Table 8. Depreciation schedule for vessels period 2016-2019

Initial value	324.5					
Estimated useful life	13					
			2016	**2017**	**2018**	**2019**
Depreciation (existing)			25.0	25.0	25.0	25.0
Depreciation (increase)	FCInv	Useful life				
2016	11.1	10	0.6	1.1	1.1	1.1
2017	8.3	10		0.4	0.8	0.8
2018	9.0	10			0.4	0.9
2019	9.5	10				0.5
Total Depreciation			**25.5**	**26.5**	**27.3**	**28.3**

Most of the non-current interest-bearing liabilities of Viking Lines comes from the loan it took in 2012 to finance the order of the vessel Viking Grace while the current amount is a portion of the principal it must pay back every year. The information regarding the pay back schedule can be found in the annual reports, therefore the author only needs to estimate the interest rate of the non-current interest-bearing liabilities by dividing the amount of interest expense in a certain year with the average amount of the liabilities in that same year (average of beginning and ending balance). Interest rates were then estimated as an average of that of the last three years and interest expenses for coming

years were calculated by multiplying the rates with the average amount of non-current liabilities. In addition, the author also expected that Viking Line would not take any additional loan until 2020 when the new vessel it ordered is delivered. Deferred tax liabilities, which mostly result from the difference between depreciation calculation by the company and by taxation authorities, were assumed to remain unchanged. Finally, the author assumed Viking Line would not issue bonds or common shares as financing instruments and therefore, the amount of share capital and minority remain unchanged as well.

Table 9. Assumptions for interest-bearing liabilities and other items in balance sheet forecasted period 2017-2019

	2017E	2018E	2019E
Income tax assets	0 (realized in income statement)	0	0
Advance payments	Same as 2016	Same as 2017	Same as 2018
Receivables	Same as 2016	Same as 2017	Same as 2018
Income tax liabilities	Same as 2016	Same as 2017	Same as 2018
Non-current interest-bearing liabilities	Not increase	Not increase	Not increase
Interest rate	Average of last 3 years	Average of last 3 years	Average of last 3 years
Deferred tax liabilities	Same as 2016	Same as 2017	Same as 2018
Share capital	Same as 2016	Same as 2017	Same as 2018
Minority	Same as 2016	Same as 2017	Same as 2018

5.2.3 Cash flow statement

There are not many items need to be forecasted in the cash flow statement since most of the constituent items can be linked from the other two statements. For the sake of simplicity, the author assumed there would be no divestment in non-current assets and investment available for sale from 2017 to 2019. Looking back at the historical data from 2012 to 2016, there were little divestment of non-current assets and therefore, the assumption should not cause significant error to the forecasted results. Since there would no divestment in non-current assets, there should not be any capital gains from non-current assets. Dividend payments in 2018 and 2019 were assumed to equal the amount paid in 2014, which was higher than that in 2016 due to better financial results.

Table 10. Assumptions for cash flow statement forecasted period 2017-2019

	2017E	2018E	2019E
Capital gains from non-current assets	No capital gains		
Divestment of vessels	No divestment		
Divestment of other tangible and intangible assets	No divestment		
Divestment of investment available for sale	No divestment		
Dividend paid	Annual report 2016	Same as in 2014	Same as in 2018

5.3 Valuation

For the valuation process, the forecasted FCFF, the WACC, and the estimated growth rate are required. As mentioned before, the WACC for Viking Line, which serves as a discount rate of future cash flow, will be estimated as the sum of cost of debt and cost of equity of the company, multiplied by their weights at market value. Since Viking Line does not issue any debt instrument, the average debt was estimated as the average

amount of non-current interest-bearing liabilities from 2012 to 2019. The cost of debt is then the interest rate of the liabilities, assuming it would remain constant at 2.8%. On the other hand, cost of equity was estimated using the CAPM. The inputs for the model include the RFR, the beta coefficient of Viking Line relative to the market, and the RP, which is the required rate of return of the market minus the RFR. The monthly average yield of Finnish 10-year bonds in the last 5 years, March 30th, 2012 to March 31st, 2016, which was 1.14% and the compounded annual growth rate (CAGR) of the Nasdaq OMX Helsinki All-share Index (OMXHGI) in the same period, which was 13.69%, were used as the RFR and the required rate of return of the market, respectively. Viking Line is a Finnish company and its shares are listed in the Helsinki stock exchange (ticker: VIK1V), which means it is subjected to Finnish laws and regulations and is influenced by the Finnish market. Hence, the Finnish 10-year bond and the Helsinki All-share Index would be good measures for the market risks. Then, to see how Viking Line correlates with those whole market, the beta coefficient is calculated using the formula provided in the literature review:

$$\beta = \frac{Cov(VIK1V, OMXHGI)}{Var(OMXHGI)} = 0.4$$

The covariance of Viking Line's return and the market return was derived from the monthly changes in price of Viking Line shares and of the OMXGI from March 30th, 2012 to March 31st, 2017. The covariance then was divided by the variance of monthly price changes of OMXHGI in the same period to get the beta coefficient of approximately 0.4. Next, the cost of equity is calculated using the CAPM:

$$\begin{aligned} r_e = RFR + \beta[E(R_M) - RFR] \\ = Finnish\ 10Y\ bond\ yield \\ + \beta[CAGR(OMXHGI) - Finnish\ 10Y\ bond\ yield] = 6.21\% \end{aligned}$$

The market value weight of equity was estimated by dividing the market value of equity of Viking Line, share price on March 31st, 2017 timed number of outstanding shares, with the sum of which and the market value of the company's debt. The weight of debt would equal to 1 subtracted by the weight of equity and finally the WACC was calcu-

lated at around 4.7%.

Table 11. Capital structure of Viking Line

EQUITY	
Share price on 31/3/2017 (EUR)	20.5
Outstanding shares (million)	10.8
Equity value (at market price, EUR million)	221.4
Equity weight	61.1%
Cost of equity	6.21%
DEBT	
Debt value (EUR million)	140.9
Debt weight	38.9%
Cost of debt	2.8%

Forecasted FCFF from 2017-2019 can be calculated using one of the approaches discussed in the literature review section. In this paper, the author chose to derive FCFF from CFO since it was already calculated in the cash flow statement. In addition, CFO can be considered a reliable measurement since it is difficult for companies to manipulate the number. After calculating the FCFF from 2017 to 2019, the author must assume a continually cash flow with a constant growth rate from 2020 forward to estimate the terminal value of Viking Line. For 2020, the author estimated that FCFF would be lower than that of 2018 and 2019 since capital expenditure would probably increase substantially for the investment of the new vessel it had ordered at the end of 2016. The FCFF in 2020 was estimated by taking the average amount of FCFF from 2016 to 2019. A stable growth rate of 0.6% was expected considering the Finnish economy is slowly recovering and there is growth potential for the ferry industry in the BSR. In addition,

analysis of the industry showed it was likely that the ferry industry in BSR reached the maturity stage where several large companies dominate the market and create an enormous entrance barrier to new comers. Therefore, a modest growth rate should be reasonable for Viking Line. All the future cash flows were then discounted back to present using the WACC to get the firm value of Viking Line at €530.5 million. Then, the equity value was derived by subtracting the firm value with all the liabilities at the end of 2016 in the balance sheet. Finally, the value per share was estimated at €23.6 by dividing the equity value by the number of outstanding shares. The estimated value per share is higher than the market price on March 31st, 2017 which indicates that Viking Line was undervalued.

Table 12. Viking Line valuation

	2017E	2018E	2019E	2020 forward
FCFF (EUR million)	23.0	26.1	25.6	22.8
Growth rate %				0.6%
WACC				4.7%
NPV 2017-2019 (EUR million)			68.1	
Terminal value (EUR million)				462.3
Firm value (EUR million)		530.5		
Equity value (EUR million)		247.5		
Value per share (EUR)		23.6		

6 DICUSSION

The estimated value of Viking Line's share indicated that it was undervalued at the market price of €20.5. In other words, according to the valuation conducted above, the author expected that Viking Line's share worth approximately €23.6 and that in the near future, probably in one year, its price would increase to its fair value. Therefore, if considering only the fundamental valuation, it is suggested that investing in the company, at market share price of €20.5, will be profitable.

Nevertheless, the results from the valuation might or might not be precise. As mentioned before, the valuation process involves anticipating about the future with many uncertainties that there is no guarantee that the future results would be as expected or might not even close to that. And as it was illustrated in the process, a lot of assumptions were made and most of them were subjective to the author's opinion It implies that the estimated results might differ from one analyst to another, hence one should, if possible, put them in comparison to have a consensus view. Furthermore, the valuation process conducted above is a primary research which lacks insight information from the company's management and employs only one valuation method that is DCF method. In fact, analysts would combine different methods such as relative valuation using multiples of peered companies in the same industry or applying technical analysis on stock price movements on top of the DCF valuation as well as getting access to different pools of information to minimize the subjective biases. It is suggested that investors and interested readers should consider other factors as well as employ additional valuation techniques to have a more precise result.

One factor that investors and interested readers should take into account when making investment decision is the liquidity of an asset. Liquidity of an asset, or specifically in this paper a public equity or listed stock, refers to "the ability to trade a substantial amount of a financial asset at close to current market price" (Kemp, 2014). Liquidity can be measured by the average daily trading volume of the stock. Thus, liquid stocks usually have high average trading volume while low average trading volume indicates low liquidity. Liquidity can have a considerable impact trading strategy and can even be used as a predictive tool for future price. First, it is apparent that liquid stocks should be

easy to trade on the market, which is preferred by traders who aims to exploit the short-term mispricing period of certain stocks to gain profit. On the contrary, liquidity is less important to investors who aim to buy a stock and keep it in a long period. Second, because illiquid stocks cannot be traded as easily as their liquid counterparts, investors tend to demand higher return for keeping them, which has a large impact on stock valuation. A study by Chen, Ibbotson and Hu (2010) showed that investing in illiquid stocks with a low volume-to-earnings ratio pays more than going after most popular stocks and that liquidity as an investment style would continue to outperform in the future. In addition, Bali, Peng, Shen and Tang (2013) showed that stocks which are less liquid or received less investor attention underreact to liquidity shocks, which refer to significant change in stock liquidity triggered by public information releases. Based on the study, analysts at Standard & Poor developed an investing strategy using changes in liquidity as a signal to predict future stock prices.

After all, fundamental value has always been a solid foundation in asset valuation with DCF method being a powerful and reliable tool implied by the widely use among analysts. The valuation done in this thesis has given a demonstration on how to conduct such process and showed the author's analysis and expectation on Viking Line share price, though the input was limited to historical data and public-released information. Therefore, it is suggested to consider additional factors as well as other valuation methods to improve the precision of the estimated results. Another thing to keep in mind is that the estimated fair value of an asset will differ from time to time. Thus, one must update his or her valuation on a regular basis: yearly, quarterly, or monthly in accordance with information releases. Financial models similar to the one in this paper are deliberately built so that one can easily make adjustments by changing one or more assumptions to reflect the impacts of new information on fair value of assets.

7 SUMMARY AND CONCLUSION

People choose to invest their money in hope of getting a higher amount in return. Nevertheless, they must accept the risk that the return may differ from their expectations. Thus, the risk of an investment can be measured by the variance of expected future returns of that investment. The higher the risk of an investment is, the higher the return will be. Based on this theoretical principle, the value of an asset is the future cash flow it can generate discounted at an opportunity rate that reflects the risks of the asset. Thus, the DCF method is widely used to estimate the true value of an asset. On the stock market, the price of an equity or a stock determined by the market may differ from its true value to the extent that it is overvalued or undervalued. In that belief, the investment theory suggests to buy or hold a stock if it is undervalued and not to buy or sell it if it is overvalued.

In an attempt of illustrating how the equity valuation process is conducted, the Finnish company Viking Line, which operates in the cruise and ferry industry, was valuated and determined its investment potential. The valuation was limited to applying only to public equity, employing only DCF method using FCFF model with historical data obtained from Viking Line annual reports from 2012 to 2016, and investment potential is determined solely on estimated value per share. Within the limitations, the author found the estimated value per share was €23.6, which was higher than the market price of €20.5 on March 31st, 2017 when the valuation was started. Hence, the conclusion was that Viking Line was undervalued and investing in the company would be profitable.

The estimated result, however, was bound by the stated limitations and the author's subjective judgement, therefore might differ from other similar valuations. After all, equity valuation is an elusive process of anticipating the future outcomes and accepting the risk of uncertainties. Hence, readers are suggested to consider other relevant factors and other valuation techniques to improve precision. Furthermore, investors who are interested in investing in Viking Line should consider the result of this paper as comparable tool in estimating the company's value and the period of which this valuation is conducted as an asset value varies across time.

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APPENDICES

Appendix 1. Finnish 10-year bond monthly yield & monthly closing price of Nasdaq OMX Helsinki All-share and Viking Line share from February 29th, 2012 to March 31st, 2017

Date	Finnish 10Y bond yield	Closing price (EUR)		% price change	
		OMX Helsinki GI (OMXHGI)	Viking Line (VIK1V)	OMX Helsinki GI (OMXHGI)	Viking Line (VIK1V)
2/29/2012		11,122.81	21		
3/30/2012	2.293	11,122.62	20.5	0.00%	-2.38%
4/30/2012	2.077	10,686.97	19.06	-3.92%	-7.02%
5/31/2012	1.501	9,488.73	17	-11.21%	-10.81%
6/29/2012	1.932	9,654.88	18.15	1.75%	6.76%
7/31/2012	1.439	9,943.51	18	2.99%	-0.83%
8/31/2012	1.471	10,151.91	18	2.10%	0.00%
9/28/2012	1.744	10,406.43	17.43	2.51%	-3.17%
10/31/2012	1.724	10,504.67	17.55	0.94%	0.69%
11/30/2012	1.645	10,826.54	16.61	3.06%	-5.36%
12/28/2012	1.514	11,076.81	17.1	2.31%	2.95%
1/31/2013	1.872	11,584.21	18.5	4.58%	8.19%
2/28/2013	1.672	11,912.66	18.49	2.84%	-0.05%
3/28/2013	1.548	11,909.02	17.9	-0.03%	-3.19%
4/30/2013	1.473	12,174.74	17.6	2.23%	-1.68%
5/31/2013	1.745	12,384.68	17.15	1.72%	-2.56%
6/28/2013	2.02	11,743.45	17.2	-5.18%	0.29%
7/31/2013	1.93	12,175.39	17.9	3.68%	4.07%
8/30/2013	2.139	12,455.08	18.8	2.30%	5.03%
9/30/2013	2.006	13,675.95	19.08	9.80%	1.49%
10/31/2013	1.885	14,171.06	18.1	3.62%	-5.14%
11/29/2013	1.901	14,609.33	18.05	3.09%	-0.28%
12/30/2013	2.15	14,648.35	17.82	0.27%	-1.27%
1/31/2014	1.775	14,036.67	17.55	-4.18%	-1.52%
2/28/2014	1.924	15,066.90	18.19	7.34%	3.65%
3/31/2014	1.87	14,873.13	17.74	-1.29%	-2.47%
4/30/2014	1.762	15,222.59	16.7	2.35%	-5.86%
5/30/2014	1.605	15,845.90	16.77	4.09%	0.42%
6/30/2014	1.446	15,823.42	16.53	-0.14%	-1.43%
7/31/2014	1.295	15,824.35	16.3	0.01%	-1.39%
8/29/2014	1.051	15,944.94	15.89	0.76%	-2.52%
9/30/2014	1.056	16,010.24	14.9	0.41%	-6.23%
10/31/2014	0.96	15,952.14	13.7	-0.36%	-8.05%

11/28/2014	0.776	16,512.42	16.1	3.51%	17.52%
12/30/2014	0.649	16,221.99	15.82	-1.76%	-1.74%
1/30/2015	0.345	17,672.95	17.77	8.94%	12.33%
2/27/2015	0.452	18,698.44	19	5.80%	6.92%
3/31/2015	0.326	19,096.53	18.52	2.13%	-2.53%
4/30/2015	0.475	18,402.25	17	-3.64%	-8.21%
5/29/2015	0.636	18,658.18	17.37	1.39%	2.18%
6/30/2015	1.008	17,949.54	16.7	-3.80%	-3.86%
7/31/2015	0.803	18,751.45	16.68	4.47%	-0.12%
8/31/2015	0.974	17,216.36	17.6	-8.19%	5.52%
9/30/2015	0.87	16,652.68	17.21	-3.27%	-2.22%
10/30/2015	0.78	18,186.43	16.86	9.21%	-2.03%
11/30/2015	0.727	19,102.05	17.7	5.03%	4.98%
12/30/2015	0.93	18,633.19	20.7	-2.45%	16.95%
1/29/2016	0.581	18,080.88	22.7	-2.96%	9.66%
2/29/2016	0.422	17,178.74	21.75	-4.99%	-4.19%
3/31/2016	0.44	17,592.62	21.98	2.41%	1.06%
4/29/2016	0.578	17,598.58	21.53	0.03%	-2.05%
5/31/2016	0.417	18,086.47	21.4	2.77%	-0.60%
6/30/2016	0.157	17,925.77	21.4	-0.89%	0.00%
7/29/2016	0.024	18,960.92	22.3	5.77%	4.21%
8/31/2016	0.073	19,038.99	22.5	0.41%	0.90%
9/30/2016	0.028	19,568.19	21.8	2.78%	-3.11%
10/31/2016	0.295	19,028.86	22	-2.76%	0.92%
11/30/2016	0.466	19,144.88	20.79	0.61%	-5.50%
12/30/2016	0.356	20,208.03	20.24	5.55%	-2.65%
1/31/2017	0.619	19,874.95	20.52	-1.65%	1.38%
2/28/2017	0.352	20,465.91	20.35	2.97%	-0.83%
3/31/2017	0.446	21,121.78	20.5	3.20%	0.74%
Average bond yield					**1.1382**
OMXHGI compound annual growth rate (CAGR)					**0.1369**
% price change covariance (OMXHGI, VIK1V)					**0.0006**
% price change variance (OMXHGI)					**0.0015**
Beta coefficient (OMXHGI, VIK1V)					**0.4064**

Appendix 2. Financial spreadsheet model of Viking Line period 2012-2019

In this section, the excel spreadsheets conducted in the valuation process of Viking Line are presented. The interpretations for cell colors are as followed:

Yellow cell contains input data
Purple cell contains result linked from cells from other sheets
Green cell contains estimated/forecasted value
White cell contains calculation within the same sheet

VALUATION EUR Million (Except value per share)	2017E	2018E	2019E	2020 for-ward
FCFF	23.0	26.1	25.6	22.8
Growth rate				0.60%
WACC				4.7%
NPV 2017-19			**68.1**	
Terminal value				**462.3**
Firm value				**530.5**
Equity value				**247.5**
Value per share (EUR)				**23.6**
Financial Structure				
Share price 31/3/2017 (EUR)				**20.5**
Outstanding shares (million)				10.8
Equity (Market)				221.4
Equity weight				61.1%
Beta				0.40
Risk-free rate				1.14%
Market return				13.69%
Cost of Equity				6.21%
Debt				140.9
Cost of Debt				2.8%
Debt weight				38.9%

INCOME STATEMENT (CONSOLIDATED) EUR Million Except	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Sales Revenue	516.1	549.4	527.4	530.5	519.6	525.0	529.1	533.4
Passenger	477.8	508.8	483.8	480.0	472.6	477.4	480.3	483.2
Cargo	34.3	36.5	39.6	46.5	44.3	44.8	46.1	47.4
Miscellaneous	4.0	4.1	4.0	4.0	2.7	2.7	2.7	2.7
Cost of sales	149.6	150.6	148.1	153.2	151.7	152.2	153.5	154.7
Net sales	366.5	398.8	379.3	377.3	367.9	372.7	375.7	378.7
Rents on properties	0.3	0.4	0.4	0.3	0.2	0.3	0.3	0.3
Other operating income	0.1	0.4	0.3	0.2	1.8	0.3	0.3	0.3
Gross profit	**366.9**	**399.6**	**380.0**	**377.8**	**369.9**	**373.3**	**376.2**	**379.2**
Selling, general & administrative expenses	336.0	351.9	334.4	323.7	328.2	332.3	335.5	338.7
Depreciation & amortization	28.5	35.7	31.8	27.7	28.0	29.5	30.7	31.7
EBIT	**2.4**	**12.0**	**13.8**	**26.4**	**13.7**	**11.5**	**10.1**	**8.8**
Financial income	1.6	1.2	1.1	5.0	5.4	3.8	3.8	3.8
Financial expense	2.5	8.3	10.4	8.2	9.5	8.1	7.4	6.7
Affiliate profit								

One-off profit	-	22.8	27.9	-	-	-	-	-
Pre-tax core income	(0.5)	2.9	2.7	17.7	2.2	2.8	2.2	1.5
Pre-tax income	1.5	27.7	32.4	23.2	9.6	7.2	6.5	5.9
Provision for income taxes	0.7	0.2	1.8	4.4	1.5	1.1	1.0	0.9
Net income	**0.8**	**27.5**	**30.6**	**18.8**	**8.1**	**6.1**	**5.5**	**5.0**
Other comprehensive Income								
Investment available for sale	-	-	-	0.7	0.3	-	-	-
Translation differences	0.1	(0.4)	(0.9)	0.5	(0.8)	(0.4)	(0.4)	(0.4)
Total	**0.1**	**(0.4)**	**(0.9)**	**1.2**	**(0.5)**	**(0.4)**	**(0.4)**	**(0.4)**
Comprehensive income for the period	**0.9**	**27.1**	**29.7**	**20.0**	**7.6**	**5.7**	**5.1**	**4.6**
ROE	**0.00%**	**14.34%**	**13.92%**	**8.86%**	**3.41%**	**2.54%**	**2.28%**	**2.04%**
Financial income								
Dividend income	-	-	-	1.6	2.4	1.3	1.3	1.3
Interest from cash, cash equivalents and non-current receivables	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Exchange gains								

	1.2	1.1	0.9	3.2	2.8	2.3	2.3	2.3
Other	0.1	-	0.1	0.1	0.1	0.1	0.1	0.1
Total	**1.6**	**1.2**	**1.1**	**5.0**	**5.4**	**3.8**	**3.8**	**3.8**
Financial expenses								
Interest expenses on financial liabilities	1.5	6.3	5.9	5.1	4.5	3.9	3.2	2.5
Exchange losses	0.9	1.1	3.6	2.4	4.4	3.5	3.5	3.5
Other	0.1	0.9	0.9	0.7	0.6	0.7	0.7	0.7
Total	**2.5**	**8.3**	**10.4**	**8.2**	**9.5**	**8.1**	**7.4**	**6.7**
Margin	**2012A**	**2013A**	**2014A**	**2015A**	**2016A**	**2017E**	**2018E**	**2019E**
Sales Revenue	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Passenger	92.6%	92.6%	91.7%	90.5%	91.0%	90.9%	90.8%	90.6%
Cargo	6.6%	6.6%	7.5%	8.8%	8.5%	8.5%	8.7%	8.9%
Miscellaneous	0.8%	0.7%	0.8%	0.8%	0.5%	0.5%	0.5%	0.5%
Cost of sales	29.0%	27.4%	28.1%	28.9%	29.2%	29.0%	29.0%	29.0%
Gross profit	**71.0%**	**72.6%**	**72.0%**	**71.1%**	**70.9%**	**71.0%**	**71.0%**	**71.0%**
Selling, general & administrative expenses	65.1%	64.0%	63.3%	61.0%	62.9%	63.3%	63.4%	63.5%
EBIT	**0.5%**	**2.2%**	**2.6%**	**5.0%**	**2.6%**	**2.2%**	**1.9%**	**1.6%**
Financial income	0.3%	0.2%	0.2%	0.9%	1.0%	0.7%	0.7%	0.7%
Financial expense	0.5%	1.5%	2.0%	1.5%	1.8%	1.5%	1.4%	1.3%
Affiliate profit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

One-off profit	0.0%	4.1%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Pre-tax core income	-0.1%	0.5%	0.5%	3.3%	0.4%	0.5%	0.4%	0.3%
Pre-tax income	0.3%	5.0%	6.1%	4.4%	1.8%	1.4%	1.2%	1.1%
Provision for income taxes	0.1%	0.0%	0.3%	0.8%	0.3%	0.2%	0.2%	0.2%
Net income	**0.2%**	**5.0%**	**5.8%**	**3.5%**	**1.6%**	**1.2%**	**1.0%**	**0.9%**
Effective tax rate	**46.7%**	**0.7%**	**5.6%**	**19.0%**	**15.6%**	**15.6%**	**15.6%**	**15.6%**

Growth	**2012A**	**2013A**	**2014A**	**2015A**	**2016A**	**2017E**	**2018E**	**2019E**
Sales Revenue	2.3%	6.5%	-4.0%	0.6%	-2.1%	1.0%	0.8%	0.8%
Passenger		6.5%	-4.9%	-0.8%	-1.5%	1.0%	0.6%	0.6%
Cargo		6.4%	8.5%	17.4%	-4.7%	1.2%	2.9%	2.9%
Miscellaneous		2.5%	-2.4%	0.0%	-32.5%	0.0%	0.0%	0.0%
Cost of sales	5.9%	0.7%	-1.7%	3.4%	-1.0%	0.4%	0.8%	0.8%
Net sales		8.8%	-4.9%	-0.5%	-2.5%	1.3%	0.8%	0.8%
Gross profit		**8.9%**	**-4.9%**	**-0.6%**	**-2.1%**	**0.9%**	**0.8%**	**0.8%**
Selling, general & administrative expenses	-5.6%	4.7%	-5.0%	-3.2%	1.4%	1.2%	1.0%	1.0%
EBIT	**-75.5%**	**400.0%**	**15.0%**	**91.3%**	**-48.1%**	**-16.3%**	**-12.0%**	**-12.8%**
Financial income		-25.0%	-8.3%	354.5%	8.0%	-29.0%	0.0%	0.0%
Financial expense		232.0%	25.3%	-21.2%	15.9%	-15.2%	-8.3%	-8.7%
Affiliate profit								
One-off profit								
Pre-tax core income			-6.9%	555.6%	-87.6%	28.9%	-23.9%	-29.4%
Pre-tax income		**1746.7%**	**17.0%**	**-28.4%**	**-58.6%**	**-24.6%**	**-9.8%**	**-9.9%**
Provision for income taxes		-71.4%	800.0%	144.4%	-65.9%	-24.6%	-9.8%	-9.9%
Net income	**-89.5%**	**3337.5%**	**11.3%**	**-38.6%**	**-56.9%**	**-24.6%**	**-9.8%**	**-9.9%**

BALANCE SHEET (CONSOLIDATED) EUR Million	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
ASSET								
Current assets								
Cash & Cash equivalents	45.3	96.1	101.1	110.7	94.9	88.1	84.0	79.9
Trade receivables	29.1	31.0	29.3	29.4	36.1	36.5	36.8	37.1
Inventories	15.2	15.0	16.1	17.2	18.1	17.3	18.4	17.6
Income tax assets	1.9	0.1	0.3	0.5	1.7	-	-	-
Total current assets	**91.5**	**142.2**	**146.8**	**157.8**	**150.8**	**141.9**	**139.1**	**134.5**
Non-current assets								
Fixed assets	196.2	386.8	359.3	342.2	326.2	309.6	289.8	269.5
Vessels	174.2	365.2	340.1	324.5	308.5	290.3	271.9	253.1
Land	1.1	1.1	1.1	1.1	0.6	0.6	0.6	0.6
Building & structures	12.3	11.7	10.8	10.0	9.2	8.6	8.0	7.5
Machinery & Equipment	8.1	8.0	6.7	5.5	5.6	7.9	7.1	6.2
Renovation costs for rented properties	0.5	0.8	0.6	1.1	2.3	2.2	2.1	2.0
Intangible assets	0.9	0.8	0.6	0.8	1.9	1.8	1.7	1.5
Advance payments		-	-	-	-	-	-	-

	61.1							
Receivables	0.7	0.5	0.3	0.2	-	-	-	-
Investment available for sale	-	-	26.1	26.8	27.1	27.1	27.1	27.1
Other								
Total non-current assets	**258.9**	**388.1**	**386.3**	**370.0**	**355.2**	**338.5**	**318.6**	**298.1**
Total Assets	**350.4**	**530.3**	**533.1**	**527.8**	**506.0**	**480.4**	**457.7**	**432.6**
EQUITY & LIABILITIES								
Liabilities								
Current interest-bearing liabilities	8.7	15.1	23.5	23.5	23.6	23.5	23.5	23.5
Income tax liabilities	-	-	-	1.2	-	-	-	-
Account payables	77.0	75.3	67.4	68.9	72.9	69.5	70.6	69.9
Trade payables	31.4	28.1	23.9	23.5	24.4	23.7	24.8	24.1
Accrued expenses and prepaid income	34.8	35.8	32.5	34.4	37.0	34.6	34.6	34.6
Other	10.8	11.4	11.0	11.0	11.5	11.2	11.2	11.2
Total current liabilities	**85.7**	**90.4**	**90.9**	**93.6**	**96.5**	**93.0**	**94.1**	**93.4**
Non-current interest-bearing liabilities	73.1	221.2	197.5	174.0	150.6	127.1	103.6	80.1
Deferred tax	29.7	29.7	31.4	34.5	35.9	35.9	35.9	35.9

Total liabilities	**188.5**	**341.3**	**319.8**	**302.1**	**283.0**	**256.0**	**233.6**	**209.4**
Equity								
Share capital	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Minority	-	-	-	-	-	-	-	-
Total equity	**161.9**	**189.0**	**213.3**	**225.7**	**223.0**	**224.4**	**224.1**	**223.3**
Total equity and liabilities	**350.4**	**530.3**	**533.1**	**527.8**	**506.0**	**480.4**	**457.7**	**432.6**
Check	-	-	-	-	-	-	-	-

CASH FLOWS STATEMENT (CONSOLIDATED) EUR Million	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
OPERATING ACTIVITIES								
Net Income	0.8	27.5	30.6	18.8	8.1	6.1	5.5	5.0
Adjustment:								
Depreciation & impairment losses	28.5	35.7	31.8	27.7	28.0	29.5	30.7	31.7
Capital gains from non-current assets	-	(22.8)	(0.1)	-	(1.5)	-	-	-
Regarding shares received in Försäkringsaktiebolaget Alandia	-	-	(27.9)	-	-	-	-	-
Dividend income	-	-	-	(1.6)	(2.4)	(1.3)	(1.3)	(1.3)
Change in income tax assets	(0.5)	1.8	(0.2)	(0.2)	(1.2)	1.7	-	-
Change in income tax liabilities	-	-	-	1.2	(1.2)	-	-	-
Change in deferred tax liabilities	(1.5)	-	1.7	3.1	1.4	-	-	-
Other items not included in cash flow	0.1	(0.4)	2.1	(0.5)	0.9	(0.4)	(0.4)	(0.4)
Change in working capital								
Trade and other receivables	19.9	(1.9)	1.7	(0.1)	(6.7)	(0.4)	(0.3)	(0.3)
Inventories	(1.5)	0.2	(1.1)	(1.1)	(0.9)	0.8	(1.1)	0.8
Trade and other payables	7.0	(1.7)	(7.9)	1.5	4.0	(3.4)	1.1	(0.7)

Net cash flow from operating	**52.8**	**38.4**	**30.7**	**48.8**	**28.5**	**32.6**	**34.2**	**34.7**
INVESTING ACTIVITIES								
Capital expenditure	(49.7)	(172.3)	(7.2)	(10.0)	(15.9)	(12.8)	(10.8)	(11.2)
Investment in vessels	(4.0)	(168.6)	(6.1)	(7.6)	(11.1)			
Investment in other intangible and tangible assets	(11.0)	(3.7)	(1.1)	(2.4)	(4.8)			
Advanced payments	(34.7)	-	-	-	-	-	-	-
Divestment of vessels	-	29.9	-	-	-	-	-	-
Divestment of other intangible and tangible assets	0.1	0.2	0.3	0.2	2.6	-	-	-
Divestment of investments available for sale	-	-	1.6	-	-	-	-	-
Payments received for non-current receivables	0.2	0.2	0.2	0.1	0.2	-	-	-
Dividends received	-	-	-	1.6	2.4	1.3	1.3	1.3
Net cash flow from investing	**(49.4)**	**(142.0)**	**(5.1)**	**(8.1)**	**(10.7)**	**(11.5)**	**(9.4)**	**(9.9)**
FINANCING ACTIVITIES								
Increased in non-current liabilities	1.0	179.0	-	-	0.2	-	-	-
Amortization of non-current liabilities	(9.3)	(24.6)	(15.2)	(23.5)	(23.5)	(23.6)	(23.5)	(23.5)

Dividends paid	(5.4)	-	(5.4)	(7.6)	(10.3)	(4.3)	(5.4)	(5.4)
Net cash flow from financing	**(13.7)**	**154.4**	**(20.6)**	**(31.1)**	**(33.6)**	**(27.9)**	**(28.9)**	**(28.9)**
Total cash flow	**(10.3)**	**50.8**	**5.0**	**9.6**	**(15.8)**	**(6.8)**	**(4.1)**	**(4.1)**
Beginning cash and cash equivalent	55.6	45.3	96.1	101.1	110.7	94.9	88.1	84.0
Ending cash and cash equivalent	**45.3**	**96.1**	**101.1**	**110.7**	**94.9**	**88.1**	**84.0**	**79.9**
Free Cash Flow to Firm	**3.9**	**(127.6)**	**29.1**	**42.9**	**16.4**	**23.0**	**26.1**	**25.6**

CORE BUSINESS **Passenger service**	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Number of passengers	6,349,903	6,533,650	6,610,146	6,568,684	6,502,191	6,541,610	6,581,268	6,621,167
% change	-0.03%	2.89%	1.17%	-0.63%	-1.01%	0.61%	0.61%	0.61%
Revenue (EUR Mil)	477.8	508.8	483.8	480	472.6	477.4	480.3	483.2
% change	2.30%	6.49%	-4.91%	-0.79%	-1.54%	1.02%	0.61%	0.61%
Revenue per passenger	75.25	77.87	73.19	73.07	72.68	72.98	72.98	72.98
Route								
Turku-Åland Islands-Stockholm	1,747,874	2,092,897	1,935,958	1,939,807	1,884,441			
Helsinki–Mariehamn–Stockholm	1,117,282	1,068,537	1,063,027	1,021,145	994,046			
Stockholm and Mariehamn	909,000	840,089	860,243	919,087	892,253			
Helsinki–Tallinn (Estonia)	1,847,691	1,872,850	2,044,340	2,001,276	2,031,224			
Mariehamn–Kapellskär	728,056	659,277	706,578	687,369	700,227			
Total passenengers	**6,349,903**	**6,533,650**	**6,610,146**	**6,568,684**	**6,502,191**	**6,541,610**	**6,581,268**	**6,621,167**

Cargo service	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Number of cargos	116,906	119,704	129,255	133,163	131,918	135,691	139,571	143,563
% change	1.84%	2.39%	7.98%	3.02%	-0.93%	2.86%	2.86%	2.86%
Revenue (EUR Mil)	34.3	36.5	39.6	46.5	44.3	44.8	46.1	47.4
% change	5.21%	6.41%	8.49%	17.42%	-4.73%	1.22%	2.86%	2.86%
Revenue per cargo	293.4	304.9	306.4	349.2	335.8	330.5	330.5	330.5
Miscellaneous revenue (EUR Mil)	4	4.1	4	4	2.7	2.7	2.7	2.7
Total core revenue (EUR Mil)	516.1	549.4	527.4	530.5	519.6	525.0	529.1	533.4

WORKING CAPITAL EUR Million	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Sales Revenue	516.1	549.4	527.4	530.5	519.6	525.0	529.1	533.4
Cost of Sales	149.6	150.6	148.1	153.2	151.7	152.2	153.5	154.7
Working Capital Balances								
Receivables	29.1	31	29.3	29.4	36.1	36.5	36.8	37.1
Inventories	15.2	15	16.1	17.2	18.1	17.3	18.4	17.6
Account Payables	77.0	75.3	67.4	68.9	72.9	69.5	70.6	69.9
Trade payables	31.4	28.1	23.9	23.5	24.4	23.7	24.8	24.1
Accrued expenses and prepaid income	34.8	35.8	32.5	34.4	37.0	34.6	34.6	34.6
Other payables	10.8	11.4	11.0	11.0	11.5	11.2	11.2	11.2
Net working capital	**-32.7**	**-29.3**	**-22**	**-22.3**	**-18.7**	**-15.7**	**-15.4**	**-15.2**
		3.4	7.3	-0.3	3.6	3.0	0.2	0.2
Assumptions								
Receivables/sales	0.056	0.056	0.056	0.055	0.069	0.069	0.069	0.069
Days inventory outstanding		36.60	38.32	39.67	42.47	42.47	42.47	42.47
Days trade payables outstanding		72.1	64.1	56.5	57.6	57.6	57.6	57.6

DEPRECIATION SCHEDULE EUR Million	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Net sales	366.5	398.8	379.3	377.3	367.9	372.7	375.7	378.7
CapEx	15	172.3	7.1	10	15.8	12.8	10.8	11.2
Depreciation & Amortization	28.5	35.7	31.8	27.7	28.0	29.5	30.7	31.7
Tangible & intangible assets								
PP&E								
Beginning	209.6	196.2	386.8	359.3	342.2	326.2	309.6	289.8
Increase	14.9	172.0	7.0	9.6	14.5	12.6	10.6	11.0
Ending	196.2	386.8	359.3	342.2	326.2	309.6	289.8	269.5
Depreciation	28.1	35.3	31.5	27.5	27.8	29.2	30.3	31.3
Intangible assets - Straight line method								
Beginning	1.1	0.9	0.8	0.6	0.8	1.9	1.8	1.7
Increase	0.1	0.3	0.1	0.4	1.3	0.2	0.2	0.2
Ending	0.9	0.8	0.6	0.8	1.9	1.8	1.7	1.5
Amortization	0.4	0.4	0.3	0.2	0.2	0.3	0.4	0.4
Amortization schedule								
Initial value	0.8							
Estimated useful life	5							
					2016	2017	2018	2019
Amortization (existing)					0.2	0.2	0.2	0.2
Amortization (increase)	CapEx	Useful life						
2016	1.3	10			0.1	0.1	0.1	0.1
2017	0.2	5				0.0	0.0	0.0
2018	0.2	5					0.0	0.0
2019	0.2	5						0.0
Total Amortization					**0.2**	**0.3**	**0.4**	**0.4**

PP&E breakdown								
Land								
Beginning	1.1	1.1	1.1	1.1	1.1	0.6	0.6	0.6
Ending	1.1	1.1	1.1	1.1	0.6	0.6	0.6	0.6
Vessels - Straight line method								
Beginning	196	174.2	365.2	340.1	324.5	308.5	290.3	271.9
Increase	4	168.6	6.1	7.6	11.1	8.3	9.0	9.5
Ending	174.2	365.2	340.1	324.5	308.5	290.3	271.9	253.1
Depreciation	25.7	31.7	28.3	24.2	25.3	26.5	27.3	28.3
Depreciation schedule								
Initial value	324.5							
Estimated useful life	13							
					2016	**2017**	**2018**	**2019**
Depreciation (existing)					25.0	25.0	25.0	25.0
Depreciation (increase)	CapEx	Useful life						
2016	11.1	10			0.6	1.1	1.1	1.1
2017	8.3	10				0.4	0.8	0.8
2018	9.0	10					0.4	0.9
2019	9.5	10						0.5
Total Depreciation					**25.5**	**26.5**	**27.3**	**28.3**

Building and structures - % of remaining expenditure								
Beginning	6.6	12.3	11.7	10.8	10	9.2	8.6	8.0
Increase	6.3	0.4	0	0	0.4	0.1	0.1	0.1
Ending	12.3	11.7	10.8	10	9.2	8.6	8.0	7.5
Depreciation	0.6	1	0.9	0.9	0.8	0.7	0.7	0.6
%Depreciation/Ending value		8.1%	7.7%	8.3%	8.0%	8.0%	8.0%	8.0%
Machinery & Equipment - Straight line method								
Beginning	5.4	8.1	8	6.7	5.5	5.6	7.9	7.1
Increase	4.4	2.7	0.9	1.2	1.7	4.0	1.3	1.3
Ending	8.1	8	6.7	5.5	5.6	7.9	7.1	6.2
Depreciation	1.6	2.5	2.2	2.3	1.5	1.7	2.0	2.1
Depreciation schedule								
Initial value	5.5							
Estimated useful life	4							
					2016	**2017**	**2018**	**2019**
Depreciation (existing)					1.4	1.4	1.4	1.4
Depreciation (increase)	CapEx	Useful life						
2016	1.7	10			0.1	0.2	0.2	0.2
2017	4.0	10				0.2	0.4	0.4
2018	1.3	10					0.1	0.1
2019	1.3	10						0.1
Total Depreciation					**1.5**	**1.7**	**2.0**	**2.1**

Renovation costs - Straight line method								
Beginning	0.5	0.5	0.8	0.6	1.1	2.3	2.2	2.1
Increase	0.2	0.3	0	0.8	1.3	0.2	0.2	0.2
Ending	0.5	0.8	0.6	1.1	2.3	2.2	2.1	2.0
Depreciation	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.3
Depreciation schedule								
Initial value	1.1							
Estimated useful life	10							
					2016	**2017**	**2018**	**2019**
Depreciation (existing)					0.1	0.1	0.1	0.1
Depreciation (increase)	CapEx	Useful life						
2016	1.3	10			0.1	0.1	0.1	0.1
2017	0.2	10				0.0	0.0	0.0
2018	0.2	10					0.0	0.0
2019	0.2	10						0.0
Total Depreciation					**0.2**	**0.2**	**0.3**	**0.3**

INTEREST-BEARING LIABILITIES EUR Million Non-current liabilities - Loans from credit institutions	2012A	2013A	2014A	2015A	2016A	2017E	2018E	2019E
Beginning Balance	81.5	73.1	221.2	197.5	174	150.6	127.1	103.6
Increase	1	179	0	0	0.2	0	0	0
Amortization (Principal payments)	9.3	24.6	15.2	23.5	23.5	23.6	23.5	23.5
Change in current liabilities	0.1	6.4	8.4	0	0.1	-0.1	0	0
Ending balance	**73.1**	**221.1**	**197.6**	**174**	**150.6**	**127.1**	**103.6**	**80.1**
Interest expense	1.5	6.3	5.9	5.1	4.5	3.9	3.2	2.5
% Interest rate	1.9%	4.3%	2.8%	2.7%	2.8%	2.8%	2.8%	2.8%
Current liabilities - Principal payments								
Beginning balance	8.6	8.7	15.1	23.5	23.5	23.6	23.5	23.5
Change	0.1	6.4	8.4	0	0.1	-0.1	0	0
Ending balance	**8.7**	**15.1**	**23.5**	**23.5**	**23.6**	**23.5**	**23.5**	**23.5**
Total interest-bearing liabilities	**81.8**	**236.2**	**221.1**	**197.5**	**174.2**	**150.6**	**127.1**	**103.6**