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AF Gruppen - Valuation and Case Study on Economic Moats

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*“This thesis is a part of the MSc programme at BI Norwegian Business School. The school takes no responsibility for the methods used, results found and conclusions drawn.”*

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## 1. Introduction

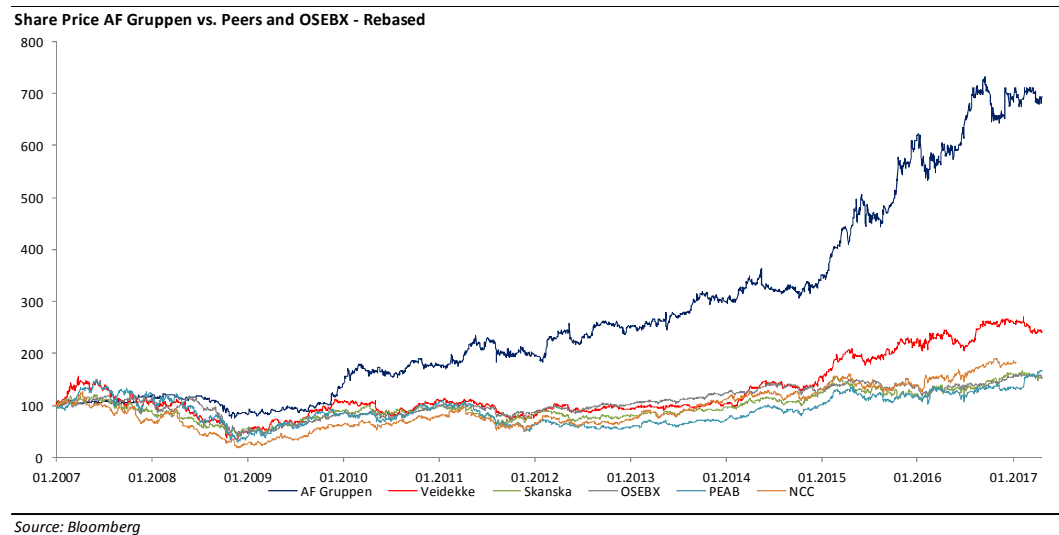
Economic moats represent sustainable competitive advantages that allow companies to protect their value and lead to excess returns over a long-term horizon (Morningstar, 2016). This sentence lays the fundament for this thesis in a way that we will elaborate on the subject of economic moats; what it is, how it's obtained and how it's valued. Legendary investor Warren Buffett and CEO of Berkshire Hathaway once said the following:

*“The most important thing to me (when considering an investment) is figuring out how big a moat there is around the business. What I love, of course, is a big castle and a big moat with piranhas and crocodiles.”* – (Buffet, 1994).

The subject has to some extent been discussed in other literature and whether or not an economic moat creates excess return has been tested empirically, to be discussed later on. However, we wish to put the matter into context by performing a case study on AF Gruppen, where we will perform a fully-fledged valuation of the company and attempt to value their suspected moat using the frameworks and theories soon to be introduced.

### 1.1 Context and motivation

AF Gruppen's roots dates back to 1985 when it started out as a civil engineering company. Since the inception of the company, they have extended their horizon through the entering of several new business areas and today divide its operations into six business segments: Civil Engineering, Environment, Building, Property, Energy and Offshore. The well timed entries into new segments in addition to being a lead player in their main segments, Civil Engineering and Building has made the company's 30 year history very profitable, both for AF Gruppen and their shareholders. Since its listing on the Oslo Stock Exchange in 1997 the total stock return from 1997 to 2017 was 2 439 % and over the last 10 years, the AF share has yielded a return of 1 243 % including dividends. This corresponds to an average annual return of 30 % (AF Gruppen, 2017).



**Figure 1: Share price AF Gruppen vs. Peers and OSEBX - Rebased**

In competitive markets, according to finance literature, capitalism plays its part and excess returns attract new entrants and competitive advantages tend to diminish after some time. Be that whether a company's technological innovation loses its prowess or a shift in consumer demand reduce the need for certain products. In any way, competitive forces eventually drive returns toward the cost of capital. Some companies however, are able to maintain their competitive advantage year-after-year and are characterized by wide economic moats and consistently high shareholder returns. AF Gruppen seems to be one of these companies.

We are intrigued by the solid performance of AF Gruppen and wish to perform a valuation of the company to find out whether the company is correctly priced. Performing a valuation from A-Z will further help strengthen the toolbox we bring with us after graduating from BI since we both pursue careers in investment banking. To add further substance to our thesis and contribute to literature we wish to further investigate and elaborate on the subject of economic moats, and find the lack of theory on the topic as a challenge we want to address.

### *1.1.1 Problem statement*

The overall purpose behind this thesis is to estimate the value of AF Gruppen and compare it to its market value. In addition to this, we will evaluate, pinpoint and attempt to value AF Gruppen's suspected economic moat.

We have formulated the two following problem statements:

*“What is an economic moat and how is it valued?”*

After the first problem statement has been answered, we will proceed and answer the second problem statement:

*“What is the value of the equity of AF Gruppen, as of 21<sup>th</sup> of April 2017, and what is the value of its moat?”*

## 1.2 Methodology

When valuing AF Gruppen and its economic moat we will deploy a number of models, theories and frameworks, all based on various underlying assumptions and dependent on trustworthy sources.

### *1.2.1 Theory*

In order to streamline our thesis in the most effective manner, relevant frameworks and models are presented throughout the paper at its respective section, with the exception of chapter 2, which is important to properly fathom from the get-go. We will do our best to illustrate and present easily comprehensible explanations and examples where deemed necessary for the reader to fully understand our approach.

### *1.2.2 Data Collection and Criticism of Sources*

When writing our valuation of AF Gruppen, we do so from the perspective of an external party. This means that only publicly available information is used, and we employ both qualitative and quantitative sources when writing our thesis. These information sources may be subjective and less reliable and we will emphasize the importance of critically evaluating data sources during the process.

We have based large parts of our quantitative- and qualitative analyses on information published by AF Gruppen itself and deem this information source as reliable because the content of annual- and quarterly reports are highly legislated. In addition to this, less reliable sources such as newspapers, web pages, reports from investment banks and other publications have been used to supplement our data needs. In these scenarios, when auxiliary information is used, the sources have been deemed trustworthy. For financial data we use Bloomberg, by many considered the industry standard and considered very reliable.



## 2. Theory of Economic Moats

For the purpose of this paper we will now attempt to emphasize this subject further and create a better understanding of economic moats before we use AF Gruppen as a case study.

In general, an economic moat can be viewed as a (or more) competitive advantage(s). A company must have two characteristics to claim that it has a competitive advantage; the first is that it must generate or have an ability to generate returns in excess of the cost of capital. Second, the company must earn an economic return that is higher than the average of its competitors (Credit Suisse, 2013). Inspired by pioneers in familiarizing the industry with moats, Morningstar, and literature presented by Credit Suisse and McKinsey and Koller et. al. we want to attain an understanding of AF Gruppen's performance, and identify an economic moat and pinpoint whether or not it is sustainable. Sustainable value creation is rare, and sustainable competitive advantage is even rarer.

In order to properly grasp the concept of economic moats, we will present the most common types and exemplify with real companies for easier comprehension of the subject. Following our introduction of economic moats we will look into additional literature on the subject and discuss findings in empirical research studies.

### 2.1 Different Kind of Moats

Within the phenomena economic moats, there are five main types; intangible assets, switching costs, network effects, cost advantages and efficient scale. The moat permits the company to provide a service or product similar to its competitors, but despite this homogenous offering, the company is able to outperform its competitors. Moreover, one categorizes either the moat as wide or narrow. A narrow moat is defined as a small competitive advantage one company within a particular industry benefit from, and will generate a limited amount of economic benefit, lasting for a relatively short period of time. A wide economic moat, however, is defined as a strong competitive advantage, making it hard for competitors to compete for market share and profit. A wide moat also has the ability to last for a longer period of time.

#### 2.1.1 *What to look for?*

Besides the obvious ones, like Coca Cola's brand name, a moat is not always as easy to spot. When there is uncertainty, the first thing to look for when considering the

size of a firm's economic moat is the company's historical financial performance. Companies that have generated returns on capital higher than their cost of capital for many years, usually have a moat. This is especially true if their returns on capital have been rising or are fairly stable (Morningstar, 2016).

The underlying principles behind this will be elaborated in chapter 3.

## 2.2 Empirical Research

Morningstar has adopted the concept of economic moats and their analysts consistently look for companies with moats when doing their research and rating stocks, mentioned in chapter 2.1.6. They claim that firms in possession of a wide economic moat will generate superior shareholder value over the long-term (Boyd & Quinn, 2006). Even though literature has given this statement more attention over the last couple of years, empirical research to back it up is still scarce. In 2016 Kanuri & McLeod published the article "Sustainable competitive advantage and stock performance: the case for wide moat stocks". They tested whether portfolios consisting of companies Morningstar rated "wide moat" stocks delivered superior performance relative to standard benchmark portfolios. They found that "wide moat" portfolios outperformed (looking at a number of metrics) both the S&P 500 and Russell 3000 indices between 2002 and 2014, and lost less value during the 2007-2009 financial crisis compared to the same indices. Kanuri & McLeod conclude that companies with wide moats have created significant **excess value** for their investors over the course of their study.

On the other hand, Lui & Mantecon published their paper "Is sustainable Competitive Advantage and Advantage for Stock Investors?" in early 2017. They find that investing in stocks of companies with sustainable competitive advantage, the moat, does not earn higher raw returns over the period 2003-2011. The companies with a moat rating tend to be larger, financially stronger, and have lower book-to-market ratios. After controlling for size, book-to-market ratio and other risk factors, stocks with moats do not earn significantly higher abnormal returns. They do however seem to be shielded from mean reversion of higher profitability, a concept to be discussed in 3.5. One of the key criticisms Lui & Mantecon have on investing in wide moat stocks is that the moat is already reflected in the stock's market price.

They make an example of Microsoft that was rated by Morningstar as a wide moat firm because of its near monopoly in PC operating systems. Microsoft was trading at a trailing price-to-earning (P/E) ratio of nearly 50 when given wide moat rating by Morningstar. The next decade, Microsoft continued to deliver double digit revenue and EPS growth; however, the stock underperformed compared to the market. Lui & Mantecon also find that stocks with wide moats tend to be large, and empirical studies finds big companies have lower average returns (Mantecon & Liu, 2017).

### 2.3 How is a moat valued?

The valuation and identification of economic moats are not common parts of valuations, simply because few companies possess wide lasting moats and due to the lack of universally accepted frameworks and methods on the subject (Boyd & Quinn, 2006). However, frameworks for the process have been developed e.g. by Mauboussing & Callahand for the Swiss investment bank Credit Suisse; *Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation* (Credit Suisse, 2013). To break it down, they stress the importance of identifying moats described earlier by deploying traditional frameworks such as Porter's 5 forces. They then look at the actual value creation and underlying relevant performance metrics. In short, after there is sufficient evidence of the presence of an economic moat and with the necessary assumptions in place, principles like economic value added can be used to calculate the value of a company's moat. This will be illustrated later on in chapter 11.3.

With this in mind, we aim to add further substance to a classical valuation of a company, by determining the size- and value of the company's moat and figure out *why* AF Gruppen consistently deliver good results and returns to shareholders. As such, we aim to mimic what Warren Buffett and other successful value investors have managed to do; identify and value economic moats.

## 3. Fundamental Principles of Value Creation

### 3.1 Return on Invested Capital

According to McKinsey and Koller et. al, the longer a company can sustain a ROIC greater than its cost of capital, the more value it will create. For the sake of this

paper and the ability to understand what drives and sustains ROIC it is important to elaborate the subject for the reader. Cost of capital and the principles of value creation- and destruction will also be looked further into.

The ROIC represent the core elements of value creation. It is a good measure of a company's underlying operating performance because it looks at how much invested capital is required to fund the core operations of a business.

$$ROIC = \frac{NOPLAT}{Invested\ Capital}$$

*NOPLAT = Net Operating Profit Less Adjusted Taxes*

*Invested Capital = Operating Assets – Operating Liabilities*

**Equation 1: Return on Invested Capital**

NOPLAT is the after-tax profit generated from core operations, excluding any income from nonoperating assets or net financing expenses. It is profit available to all investors, including debtholders, equity holders and all other types of financing. It is important to adjust the taxes so that they don't include tax effects from net interest income/expense and nonoperating activities.

The traditional balance sheet equation, Assets = Liabilities + Equity mixes operating liabilities and sources of financing on the right side of the equation. This is why the assets and liabilities related to operations needs to be identified. This is done through reformulation of the balance sheet in chapter 6. We then arrive at invested capital that more accurately reflect capital used for operations and the financing provided by investors to fund exactly those operations. When calculating ROIC it is important to be persistent in what is included in NOPLAT and invested capital – the invested capital must reflect the assets and liabilities related to the creation of said NOPLAT.

ROIC is a better analytical tool than return on equity (ROE) and return on assets (ROA) because it focuses solely on a company's operations. This is because ROE mixes operating performance with capital structure, making peer-group analysis difficult. ROA includes nonoperating assets and ignores the benefits of operating liabilities that reduce capital required from investors (Koller, Goedhart, & Wessels, 2005, s. 162).

So why do some companies develop and sustain higher ROIC than their competitors? Let us compare two online market platforms/ retailers in Norway, for example Finn.no and Kolonial.no. The core business of Finn.no is to provide an online marketplace for everything – and charge a small amount for most of the units posted for sale. The business needs almost no inventories or accounts receivable, and consequentially the amount of invested capital is relatively low or even negative. In addition to this, the marginal cost of having a new customer is close to zero, representing increasing returns to scale. Kolonial.no on the other hand is an online grocery-delivery business and operates with a capital-intensive platform involving warehouses, delivery trucks and inventory. Additionally, Kolonial.no has to compete with local grocery stores selling the same products on already low margins. There is also a lack of increasing returns to scale due to the fact that an increased customer base requires investments in additional food trucks and drivers. So, companies like Finn.no should in general have higher ROIC than Kolonial.no.

It is also important to acknowledge the fact that ROIC varies from industry to industry. For example, the oil industry is more capital intensive than the IT software industry and consequentially median industry ROIC in the oil industry is higher (Koller, Goedhart, & Wessels, 2005, s. 104).

According to Koller et. al ROIC should be analyzed both with and without goodwill and acquired intangibles (Koller, Goedhart, & Wessels, 2005, s. 112). While ROIC without these factors explain the underlying operating performance of a company, suitable for comparisons with peers, ROIC including goodwill and acquired intangibles measures whether the company has earned adequate returns factoring in the price paid for acquisitions. This is relevant when analyzing AF Gruppen, because of their amount of goodwill in the balance sheet and aggressive acquisition strategy discussed in chapter 4 and 6.

### 3.2 Weighted Average Cost of Capital

When discussing the cost of capital in this paper, we mostly refer to the WACC. As a general expression, the discount rate is supposed to represent the opportunity cost an investor is facing by investing in one specific business instead of another business that includes similar risk. When referring to investors, one talk about both equity and debt holders, which is why the discount rate represents a weighted average of these asset classes' required rate of return.

$$WACC = \frac{Equity}{Debt + Equity} r_{equity} + \frac{Debt}{Debt + Equity} r_{debt} (1 - T_m)$$

*Equity and debt represent market-based values*

*r<sub>equity</sub> = cost of equity*

*r<sub>debt</sub> = cost of debt*

*T<sub>m</sub> = company's marginal income tax rate*

#### **Equation 2: WACC**

As the name implies, this is a weighted average of the required cost of equity and the cost of debt including tax shields. Because debtholders have a senior claim on firm's assets in case of distress and bankruptcy, the cost of debt is in practice always lower than the cost of equity. Conversely, the equity holders are the ones in control of the company and benefit the most when a company performs well. The case of optimizing capital structure is something that has been discussed through decades in the academic world with the famous Miller & Modigliani Theorem claiming that capital structure has no effect on firm value. While complicated, the theorem in its simplest form is based on the idea that with certain assumptions in place, there is no difference between a firm financing itself with debt or equity (Investopedia).

For the sake of this paper however, like ROIC, it is important to be aware of the fact that median WACC varies from industry to industry (Koller, Goedhart, & Wessels, 2005, s. 108). Let us bring up new examples from two different industries, the shipping industry and the power industry. The shipping industry is unpredictable, and one can never be sure that tonnage will have work over the next weeks or months. Debtholders and banks in particular do not like this level of uncertainty and consequentially, equity should be the regularly used source of financing. The cost of capital is then expected to be higher for shipping companies, due to a higher proportion of equity financing. On the other hand, say we have a Norwegian hydro powered power plant. This power plant will generate electricity at a relatively safe and steady pace for years to come and will more easily get loans from banks. The resulting cost of capital is then expected to be lower than that of shipping companies because of the amount of debt as opposed to equity, and associated risk of the underlying operations.

### **3.3 ROIC, WACC, Growth and Value Creation.**

One educational way to measure whether or not a company is creating value is by using the economic value added (EVA). EVA measures value created in excess of

the required rate of return from investors by a company in a single period and is defined as follows:

$$Economic\ Value\ Added = Invested\ Capital \times (ROIC - WACC)$$

**Equation 3: Economic Value Added**

Put differently, EVA is the spread between the ROIC and WACC times the amount of invested capital. What the formula tells us is that if WACC exceeds ROIC, a company is destroying value by investing additional capital and vice versa if ROIC exceeds WACC. If ROIC equals WACC, investing additional capital don't create any additional value for investors.

The same applies for growth, exemplified in table 1, below derived from the continuation value equation 4.

Effect of growth on value in different efficiency scenarios					
		Value, \$		9% Cost of Capital	
Growth	3%	800	1 100	1 400	1 600
	6%	600	1 100	1 600	2 100
	9%	400	1 100	1 900	2 700
		7%	9%	13%	25%
Return on Invested Capital					

Source: McKinsey

**Table 1: Effect of Growth on Value in different efficiency Scenarios**

$$Value = \frac{NOPLAT_{t=1} (1 - \frac{g}{ROIC})}{WACC - g}$$

*g* = growth

**Equation 4: Continuation Value Formula**

The valuation matrix and the value formula illustrates the value of a hypothetical company, holding cost of capital, in this case WACC, constant at 9 % and changing ROIC and growth rate along the columns and rows, respectively. In the left column, the company earns a ROIC lower than WACC, and as this company grows faster, from slower growth to higher growth, the value actually declines. It declines because as the company grows faster and invests more capital, it does so at a lower return than what investors demand, effectively destroying value for investors.

When ROIC equals WACC, additional growth neither creates nor destroys value. The company is simply earning its cost of capital, and just like running on a treadmill; you get a good workout and break a sweat without really getting anywhere.

On the right-hand side of the table, ROIC exceeds WACC by 4- and 16 %, and as shown, increased growth leads to an increase in the value of the company.

### 3.4 Why value value?

“A cynic is someone who knows the price of everything and the value of nothing” – a common saying amongst value investors coined by professor at NYU, Aswath Damodaran. However, how does one define value? The goal of a value investor is to purchase companies at a large discount to their intrinsic value, what the business is actually worth. Although no universal term for value exists, one common way to define value is *the present value of all future cash flows* (Investopedia).

Commonly regarded as the father of fundamental analysis and author of *The Intelligent Investor*, Benjamin Graham, focused extensively on the underlying business in order to value companies and invest in those with a low price relative to its value. In recent time, investors, with one of the world’s richest men Warren Buffett has seen great success following this philosophy (Forbes).

Although practitioners seemingly have made good profits following Benjamin Graham and the principles in *The Intelligent Investor*, the famous Efficient Market Hypothesis presented by Eugene Fama states that “security prices at any time “fully” reflect all available information” (Fama, 1970). In practice this means that there is no place for value investors, simply because the value of a company always equals its price, and the possibility of making abnormal returns based on fundamental analyses should be zero. According to the Efficient Market Hypothesis we expect to find a value per share equal to the price at the information cut-off date, 21.04.2017.

Conducting a valuation of a company is however a widespread concept, it’s a profession. It’s taught in business schools around the world and the literature on the subject is plentiful. The methodology is thoroughly tested by scholars and professionals and we feel confident that there is sufficient empirical research and similar papers to obtain the proper inspiration. *Valuation: Measuring and Managing*



the Value of Companies by Koller, T., Goedhart, M., Wessels, D. & McKinsey & Company is commonly regarded as one of the best literature on valuation, and we will depend on the framework presented here extensively. We will also supplement with theory and framework from Stephen Penman: Financial Statement analysis and Security Valuation.

After the release of their 2016 annual report - 12-month analyst Bloomberg consensus target price on AF Gruppen is NOK 160,7 per share with 3 buy ratings, 3 hold ratings and 1 sell rating. The professional analysts deploy several valuation models, such as discounted cash flows (DCF) and relative peer valuation. These, and others, are models the authors intend to use as well, nevertheless this will be elaborated later on.

### 3.5 A Firm's Competitive Life Cycle

When value investors such as Warren Buffet and Peter Lynch search for stocks in companies that are mispriced relative to its current quoted market price, underlying value creation is of prime interest. In addition to ROIC, WACC, invested capital and growth, another key element when looking at companies and value creation is *how long* a company can earn returns in excess of the cost of capital. Based on the framework presented by Credit Suisse, we will call this sustainable value creation. The sustainable value creation is directly linked to a firm's competitive life cycle, visualized in appendix 16. In general, companies find themselves in one of the four following phases (Credit Suisse, 2013).

The intuition is based on microeconomic theory and is quite simple. Companies generating high returns eventually attract competitors, willing to take a lesser, albeit still attractive return. In the end, this dynamic drive returns down to the cost of capital, which is a process researchers have found evidence for empirically (Credit Suisse, 2013). According to recent research on the field, the time that an average company can sustain excess returns is getting shorter. Credit Suisse state this is not only evident in the technology business, but is present in a wide array of industries. Rather, the shorter period in which companies are able to create excess returns are caused by the greater pace of innovation brought about in part by increased access to, and the *use* of information technology.

Where AF Gruppen belong in this grand scheme of things and whether or not they have been able to find a way around this theory, will be discussed later on in chapter 11.

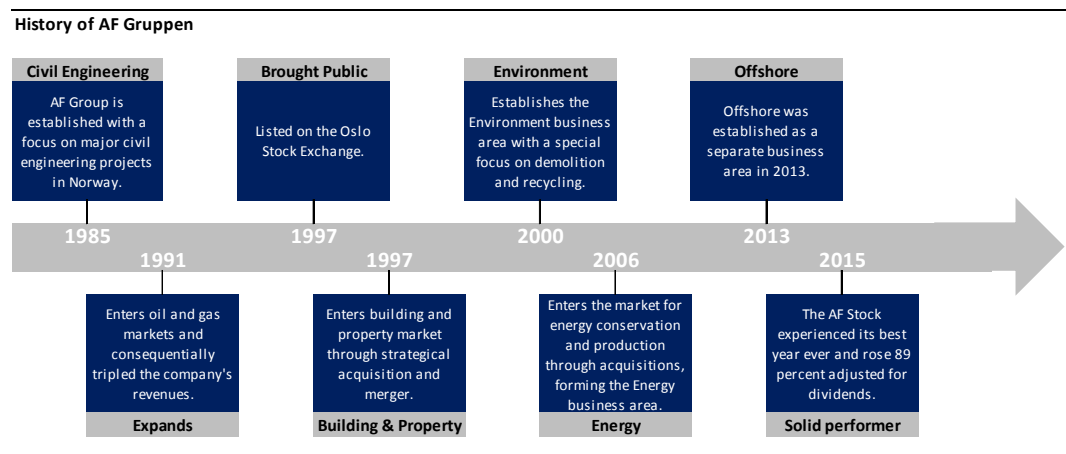
#### 4. Introduction to AF Gruppen

AF Gruppen is one of Norway’s leading contracting and industrial groups with over 3 000 employees with operations mainly in Norway and Sweden. Today, its operations range from demolition of oil platforms to major civil engineering and building projects. Their sustainable vision is: “Clearing up the past, and building the future”. Chief Executive Officer is Morten Grongstad, and the company headquarter is located in Norway, Oslo.

*“Curiosity, entrepreneurial spirit and our persistence and ability to find new and better ways to create value will be even more important when we are solving the projects of tomorrow.” – Morten Grongstad CEO, 2017.*

##### 4.1 History

Below in figure 4 is an illustration, listing up the most important events for AF.



Source: AF Gruppen

Figure 2: History of AF Gruppen

Due to the desire to expand further combined with a difficult civil engineering market, AF Gruppen entered the oil and gas sector in 1991. Simultaneously, the Troll field evolved, of which AF Gruppen entered an agreement for the construction work of the landfall tunnel. These events tripled the company’s revenues and thereby illustrate their first milestone, which strengthen their expertise in safety, project management and quality (AF Gruppen, 2017).

AF Gruppen entered the growing building and property business in 1997 through strategical mergers and acquisitions. The merger with Ragnar Evensen, one of Oslo's largest contractors increased their professionalization within the building segment, and further doubled their revenues. In addition, they acquired the company Odin to get a foothold in the property segment. During the same year, the company was listed on the Oslo Stock Exchange (AF Gruppen, 2017).

In 2000, AF Gruppen decided to take on one of the most challenging removal projects in Norway, namely the Sola refinery located at Jæren. Based on its expertise and experience from the civil engineering industry, the company had built up expertise in demolition and recycling, making them able to take on big removal projects. Within a year, AF Gruppen was established as Norway's largest demolition company, mainly caused by strategical acquisitions and direct focus on large contracts (AF Gruppen, 2017).

Similar to the entrance in the environment segment, AF Gruppen utilized its building expertise to enter the market for energy conservation and production in 2006. Through a strong desire of growth combined with acquisitions, AF Gruppen is today one of the largest centers of expertise for energy conservation and the production of renewable energy in the Nordic (AF Gruppen, 2017).

In 2005, AF Gruppen took its demolition activities offshore. In 2005, AF Gruppen developed the Environmental Base at Vats, which is one of Europe's most modern reception facilities for decommissioned offshore platforms. Today the company participates in the removal, dismantling and recycling of decommissioned offshore installations, maintenance and modification (M&M) as well as marine and rig services. In 2013 offshore was established as a separate business area (AF Gruppen, 2017).

At the end of 2014 the company entered into an agreement to acquire 70 % of the shares in LAB AS, the largest contractor in Hordaland (AF Gruppen, 2015, s. 5). By doing so, AF Gruppen took a big step towards becoming the leading contractor in Western Norway (AF Gruppen, 2015).

## 4.2 Business Areas

AF Gruppen operates within six different business areas, mainly in Norway and Sweden: Civil Engineering, Building, Environment, Property, Energy and Offshore.

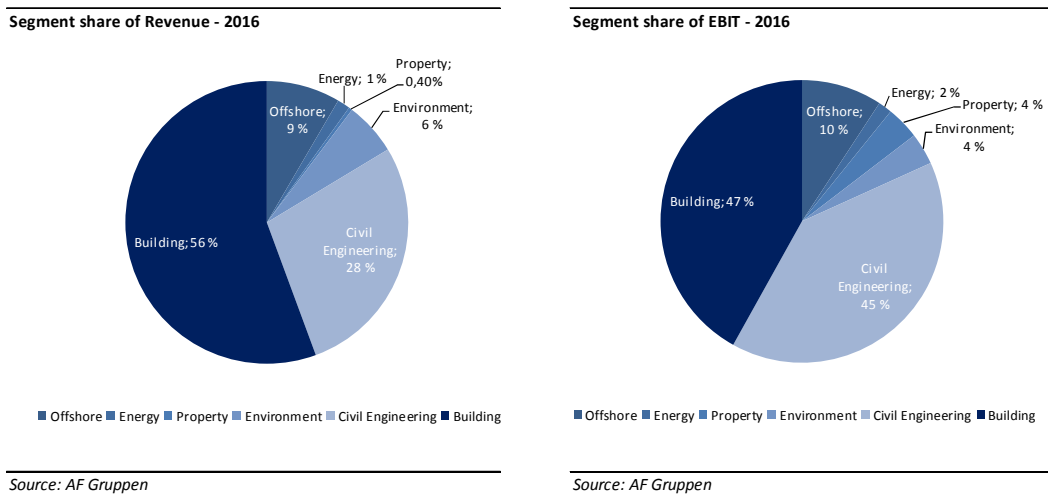


Figure 3: Segment share of Revenue and EBIT

### 4.2.1 Civil Engineering

AF Gruppen participates in all types of civil engineering projects, ranging from small and simple to large and demanding. Such projects include port facilities, foundation work, roads, railways and power & energy, as well as onshore facilities for oil and gas. The civil engineering segment consists of four business units. Most of the customers are public sector agencies and large industrial and energy companies. AF Anlegg experienced a high level of activity in 2016, with the highlight of winning the Tvedestrand-Arendal E18 road contract, which is the largest contract of such kind in Norway, with a value of NOK 3,2 billion. For the year, the Civil Engineering business area constituted 28 % of groups total revenues and 45 % of EBIT, with a total order backlog of NOK 5,589 million (AF Gruppen, 2017).

### 4.2.2 Building

AF Gruppen is one of the largest actors in commercial, residential and public building in Norway. Due to large experience, they are able to handle the entire value chain in most projects, everything from development and planning to building, as well as renovating projects. Customers ranging from small companies to large private and public clients with a long-standing relationship. The building segment consists of eight business units. All units have strong local roots and a broad range of services. The business unit AF Nybygg was established in 2016 to increase

organic growth in Greater Oslo. For the year, the Building business area constituted 56 % of groups total revenues and 47 % of EBIT, with a total order book of NOK 8,467 million (AF Gruppen, 2017).

#### *4.2.3 Environment*

AF Gruppen is Europe's leading contractor for demolition and environmental clean-up of buildings, petroleum installations and industrial plants. Operations includes environmental surveys, recycling, demolition, blasting, dredging, handling contaminated materials, clearance and the removal of shipwrecks. The environment segment consists of four business units in both Norway and Sweden. For the year, the Environment business area constituted 6 % of groups total revenues and 4 % of EBIT, with a total order backlog of NOK 212 million (AF Gruppen, 2017).

#### *4.2.4 Property*

The property segment encompasses the development of residential and non-residential buildings under AF Gruppen's own account and management. The company often cooperates with other players in the industry. Additionally, most of the projects undertaken are often organized as joint developments, located where AF Gruppen has its own contracting services. By doing so, they benefit from each other's expertise, while reducing project-specific risk. This segment is established in Norway and Sweden, and for the year the division constituted 4 % of total EBIT (AF Gruppen, 2017).

#### *4.2.5 Energy*

AF Gruppen provides energy-solutions for buildings and industry. They offer advisory and implementation services in the areas of energy conservation and the production of energy, with the goal of achieving cost-reductions as well as mitigating the environmental impact for the customer. The business area is established in Norway and consists of the units AF Energi & Miljøteknikk and Boligenergi, of which Boligenergi is owned jointly with OBOS. For the year, the Energy segment constituted 1 % of groups total revenues and 2 % of EBIT, with a total order backlog of NOK 108 million (AF Gruppen, 2017).

#### *4.2.6 Offshore*

The core areas within this business area are the removal, dismantling and recycling of decommissioned offshore installations, rig services, M&M contracts for onshore installations, as well as being a total supplier of heating, ventilation and

air conditioning (HVAC) plants offshore and marine engineering, procurement, construction, installations and commissioning (EPCIC) projects. AF has a state-of-the-art facility at Vats in Rogaland for the environmental clean-up of petroleum installations. The offshore segment consists of the business units AF Offshore Decom and AF Offshore AeronMollier, and constituted with 9 % of total revenues and 10 % of EBIT, with a total order backlog of NOK 550 million (AF Gruppen, 2017).

#### 4.3 Recent Financial Performance

In 2016, AF Gruppen reached a record-high order backlog of NOK 15,332 million (11,183 million in 2015) and received NOK 11,876 million in revenue (12,398 million). Additionally, they reported a profit margin of 8,8% (8,1%), driven by improved profitability in both the Civil Engineering- and Offshore-segment, which increased by 5,1% and 2,3% respectively. The profitability improvement of offshore was mostly driven by the removal of the deck of the Murchison steel platform in the North Sea, which facilitated to a high activity level at Vats. Also, among others, the scrapping of the Janice A platform for Maersk is expected to also give a high activity level at Vats in 2017 (AF Gruppen, 2017).

#### 4.4 Peer Group

AF Gruppen operates a wide range of business segments in a range of competitive industries and we have identified AF Gruppen's key peers, all more or less sharing the same growth, risk and cash flow profile. We note that a range of analysts use many of our peers as well, supporting our view of these companies being key competitors of AF Gruppen.

##### 4.4.1 Peab AB

Swedish company Peab operates within fields of construction, project development, and civil engineering. The Company builds commercial and residential buildings, roads, and bridges. The Peab group also includes support companies in asphalt, crane and machinery rental, rock engineering, concrete, and prefabricated elements. The Company has offices throughout Sweden, and in Norway, Finland and Poland.

##### 4.4.2 Veidekke ASA

Veidekke ASA is a Norwegian construction company. The Company's operations include local building and construction, specialized construction work, asphalt operations, crushed stone and gravel production, property development, financial

management and international contracting operations. The company has offices and operations in Norway, Sweden and Denmark.

#### 4.4.3 Skanska AB

Skanska is Scandinavia's largest construction and property development group. It provides building, financing, development, and management services for commercial, residential, and civic projects in Europe, the US, and Latin America. The company's areas of expertise include office buildings, industrial plants, single- and multifamily residences, hospitals, bridges, and highways. The group's US divisions include Skanska USA Civil and Skanska USA Building. Skanska has completed work for clients such as Boeing, IKEA, Volvo, and Petrobas. The company traces its roots to the 1887 founding of concrete manufacturer Aktiebolaget Skånska Cementgjuteriet.

#### 4.4.4 NCC AB

Once known as Nordic Construction Company, NCC traces its roots to 1875. The company is the Nordic region's second-largest construction company (behind Skanska). The company operates through three divisions: NCC Construction builds highways and other civil engineering facilities, residential developments, and office and retail space. NCC Property Development develops commercial properties. NCC Roads produces aggregates, operates asphalt plants and gravel and rock pits, and provides paving and road services. Although it primarily operates in Scandinavia, the company also builds houses in Germany and the Baltic region. Swedish firm Nordstjernen controls nearly 55% of NCC.

Peer Group Overview			
Company	Main Presence	Main Segments	Market Cap
AF Gruppen	Norway, Sweden	Construction, Civil Engineering,	NOK 14,9B
Veidekke	Norway, Sweden, Denmark	Construction	NOK 15,4B
NCC	Sweden, Denmark, Finland, Norway	Construction, Civil Engineering	NOK 25,5B
Skanska	North- and Latin America, Europe	Construction, Civil Engineering	NOK 91,7B
PEAB	Sweden, Norway, Finland	Construction, Civil Engineering	NOK 27,9B

Source: Bloomberg, Authors's Compilation

Table 2: Peer group Overview

## 5. Strategic Analysis

In order to properly analyse AF Gruppen and its future prospects, it is necessary to understand its competitive environment and strategic position in the market. To do this, we deploy PESTEL analysis, Porters five forces and VRIO, all traditional models well suited for uncovering potential threats, opportunities etc. In the

following sections we will properly introduce the models and use them to identify necessary market conditions and drivers that affect the company's profitability. Note that we will mainly concentrate on the civil engineering and the building segment, due to the fact of AF Gruppen's high exposure to these sectors.

## 5.1 PESTEL














The PESTEL analysis consists of analyses of political, economic, social, technological, environmental and legal factors. The aim of conducting a PESTEL is to identify the aspects that are the most important drivers in the industries that AF Gruppen operates in. It discusses external factors that affect the profitability of AF Gruppen and can be deployed across different industries. The framework will provide a more thorough understanding of external factors AF Gruppen cannot, or in limited degree, control.

### 5.1.1 Political

In 2016, around 30 % of AF Gruppen's revenues came from government contracts, publicly owned companies and municipalities, making AF Gruppen susceptible to political factors such as fiscal policy and decisions to improve the public infrastructure.

The Norwegian Association of Consulting Engineers (RIF) published a report regarding infrastructure investment plans in Norway called the "State of the nation" in 2015. This report estimates that there is an upgrade need of NOK 2 600bn for Norwegian public buildings and infrastructure (RIF, 2015). Although the proposed improvements are not always materialized in government budgets, they are a good place to start when attempting to pinpoint where spendings are going to be concentrated going forward.

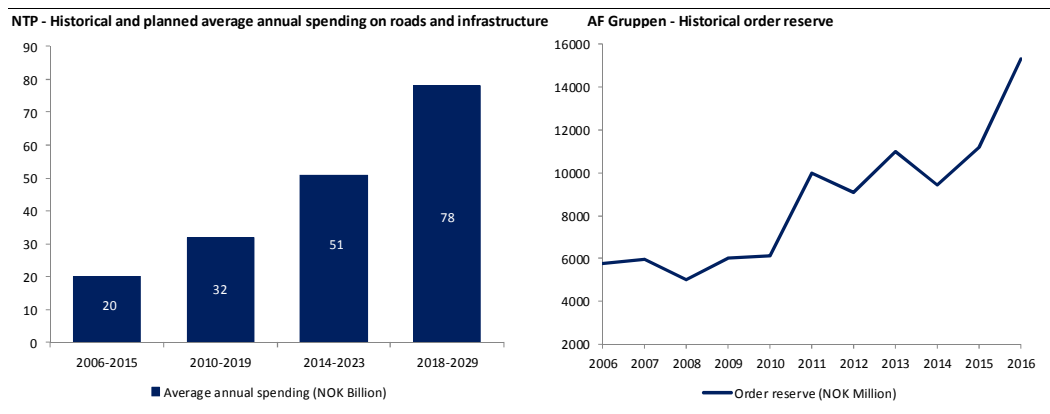


Norwegian infrastructure upgrade need according to RIF				
Area	Indicative Value	Condition	Future prospects	Estimated upgrade cost to
	NOK Billion	(1-5, where 5 is best)	(on current status)	condition 4
				NOK Billion
Municipal Buildings	1060	3		140
Hospitals etc.	330	3		40
Other public buildings	310	3		10
Railroad	400-600	2		500
Airports	80-120	4		0
National roads	500	3		800-1000
Regional roads	700	2		500-600
Local roads	400	3		250-300
Water plants	520	3		100
Sanitation facilities	590	2		110
Energy production	400-500	4		0
Energy distribution	300-470	4		0
<b>Sum</b>	<b>5800</b>	<b>3</b>		<b>2600</b>

Source: RIF - State of the Nation 2015

**Table 3: Norwegian Infrastructure upgrade-need**

The Norwegian Transport Plan (NTP), revised every fourth year, contain plans and goals of the Norwegian government regarding national and regional transport development. The current version, 2014-2023, indicate average annual spendings of NOK 51 billion and puts an emphasis on projects related to those business areas AF Gruppen operates in. Although the NTP is not a detailed year-to-year plan, it provides a certain indication to what direction public spending related to infrastructure will go the next couple of years. Since the first NTP was published in 2002, the proposed spending on infrastructure has been increased at every revision. Recently, the final draft for NTP 2018-2029 was presented with a record high total of NOK 1 000 billion of spending during the period, equaling an average annual spending of NOK 78 billion (Nasjonal Transportplan, 2017).



Source: AF Gruppen, NTP, Bloomberg, Authors' Calculations

**Figure 4: NTP - Historical and Planned spending and order reserve**

This is in favor of AF Gruppen's Civil Engineering and Building segments which in sum constitutes over 80 % of the company's revenue, and will benefit from an increased volume of government contracts.

AF Gruppen is like every other company to some extent vulnerable to political risk. Should for instance the government decide to reduce fiscal stimulus, there will be lower activity in those segments AF Gruppen operates in. However, the recent focus on public transport, improvement of public buildings and improved infrastructure arguably leave AF Gruppen well prepared for the potential consequences of political changes in the foreseeable future.

### 5.1.2 Economic

#### 5.1.2.1 Market Outlooks

In their annual report AF Gruppen informs that they are subject to operational and financial risks. These financial risks consist of exposure to fluctuations in general economic conditions and foreign exchange rates. AF Gruppen hedges its relatively small currency exposure of 6-7 % of revenues using forward contracts, limiting its foreign exchange risk exposure. The largest economic risk factor is without doubt general economic conditions in Norway. The Building and Civil Engineering segments, responsible for over 80 % of revenues in 2016 are as previously mentioned dependent on macroeconomic trends and the state of the Norwegian economy.

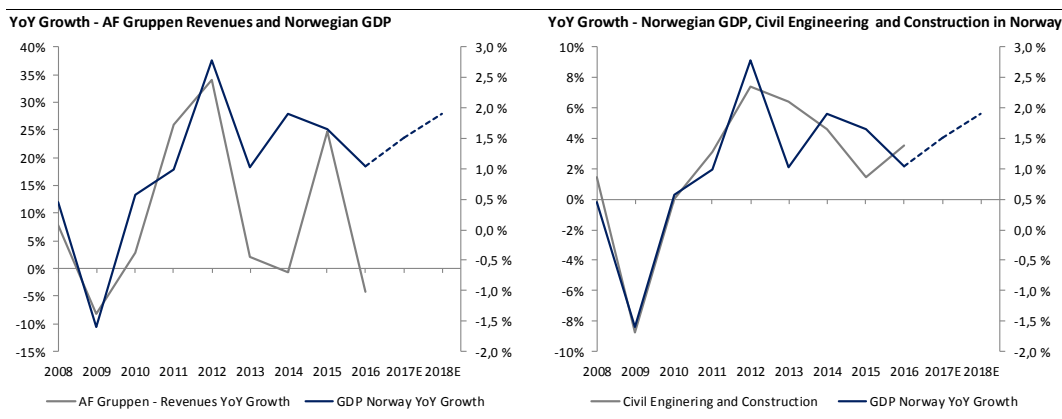
After the downturn in the Norwegian economy as a result of the steep decline in oil prices since the autumn of 2014, the Norwegian government has been keen on stimulating the economy with an increased focus on infrastructure and road

improvements (Nasjonal Transportplan, 2017). The general strong increase in housing prices, except in the Stavanger region, combined with an increased demand for housing around large population centers is also an opportunity for AF Gruppens building segment going forward. The offshore segment’s revenues were negatively affected by the recession in the oil industry as activity levels fell. However, as more rigs are being scrapped, activity in the offshore segment has increased and the business area has been able to gain contracts and turn the situation around to make a solid profit.

In the coming years, AF Gruppen is dependent on proposed investments in infrastructure being materialized and that sentiment towards further housing projects is further increased.

5.1.2.2 Construction Cycles

The civil engineering and construction industries in Norway move in cycles and are dependent on the general state of the Norwegian economy. It should then come as no surprise that the activity levels in the civil engineering and construction sectors are correlated with GDP – which represent the general activity levels in the country. When Norwegian GDP growth fell in the aftermath of the financial crisis, the mentioned sectors followed. Naturally, as graphed below, AF Gruppens year-on-year (YoY) revenue growth fell as well, as most of their revenue stem from these segments.



Source: AF Gruppen, Bloomberg, Statistics Norway

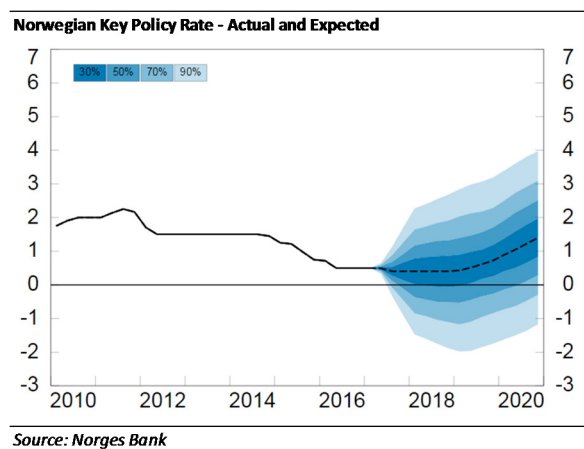
Figure 5: YoY growth - AF Gruppen revenues and Norwegian GDP

Based on better outlooks for the oil sector and an offensive fiscal policy through the NTP, YoY growth in GDP is forecasted to increase even further in the years to come, and the civil engineering and construction industries are likely to follow.

### 5.1.2.3 Interest Rate

As a result of AF Gruppens low leverage (see chapter 6), the company's direct exposure to changes in interest rates is relatively low. However, rising interest rates may indirectly affect the company through reduced overall investment sentiment and reduced activity levels. An increase in interest rates may also lead to reduced growth or even a reduction in housing prices and lower earnings on building projects for construction companies.

At the latest interest rate assembly held by the Norwegian central bank it was announced that the key policy rate was to be kept unchanged at 0,5 %, effectively lowering expectations of future interest rates as well (Norges Bank, 2017).



**Figure 6: Norwegian Key Policy Rate - Actual and Expected**

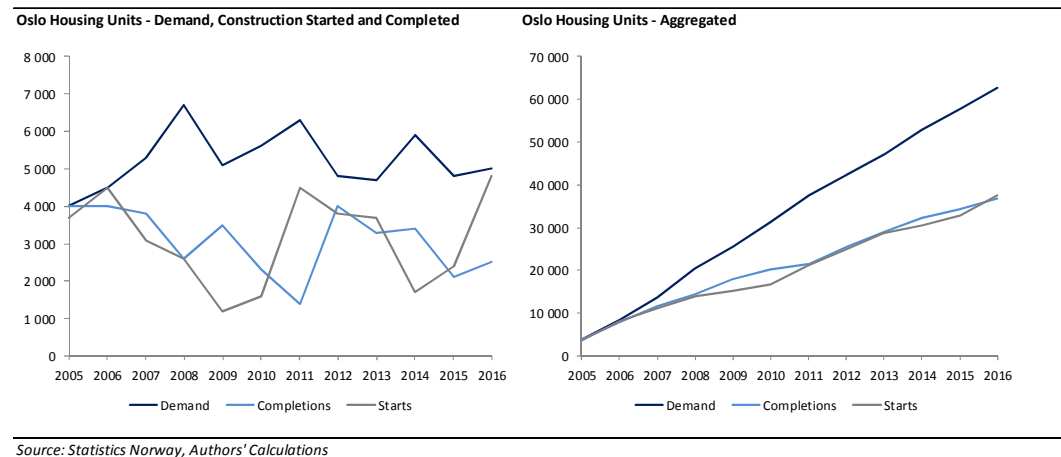
The interest rates, as well as the expected future interest rates are graphed above by the Norwegian central bank. If we base our expectations on macroeconomic theory, this will keep stimulating the economy and further encourage initiations of new projects and investments.

## 5.1.3 Social

### 5.1.3.1 Norwegian Demographics

According to Statistics Norway, the Norwegian population was around 5 250 000 at the end of 2016 where 81 percent lived in urban areas. Oslo alone saw a net increase of over 17 000 inhabitants in 2016, which in turn increase the demand for housing and infrastructure in the capital. In fact, Oslo is considered one of the fastest growing cities in Europe and the Norwegian Home Builders' Association estimate that the housing demand in Oslo is 6 700 units per year. However, only 1 700 and 2 100 new units started construction in 2014 and 2015, to be completed

during 2016-2018 (Statistics of Norway). Although almost 5 000 units started construction in 2016 in Oslo, there is a clear imbalance between supply and demand of new housing during the last 10 years, shown in figure 9 below.



**Figure 7: Oslo housing Units - Demand, Construction and Completed**

Additionally, as mentioned in the political section, the infrastructure between large population hubs needs to be improved. This is necessary in order to support those that settle down outside the city centers simply because the larger cities either can't sustain the expected Norwegian population of 6 million people by 2029, or because central housing become too expensive.

#### 5.1.3.2 Education

The last ten years there has been a steady increase of students choosing engineering as their field of study in Norway. Nevertheless, there is still a high demand for engineers, especially within the fields of construction, mechanics and electricity. In fact, according to a survey conducted by NHO, 17 % says the need for more engineers is imminent and 24 % say they need to hire someone with engineering skills in the foreseeable future (Tu, 2016). Only those skilled in craftsmanship are more sought after than engineers, however, the number of students applying for such studies has decreased significantly during the last ten years. Across Norway, those studying masonry has decreased by 64 %, painters have decreased by 59 % and carpenters by 30 % (VG, 2016). The reasons for this varies, some claim it's caused by increased competition from cheaper labour from European countries, others state it's because of these craftsmanships being frowned upon in the Norwegian society. This will lead to an unsatisfied demand of workers in the coming years, a gap that will need to be filled by foreign laborers or new technology.

#### *5.1.4 Technological*

Technological factors are related to the innovation of technology that may change the operations and market conditions in an industry.

AF Gruppen use various equipment and technology in all of their business segments. Some of the equipment are tried and tested throughout many years, whilst other technologies are new and can potentially further help increase the efficiency of operations and cut costs. By exploiting new technology and equipment, industry players can enhance earnings efficiency further and gain a competitive advantage over its competitors. In an industry where price is an important factor (to be covered in the Legal section), and players that are able to keep costs low will benefit. For further detail, please see the VRIO-Analysis.

#### *5.1.5 Environmental*

Environmental factors relate to factors that are determined by, and influence the environment. Some industries are more susceptible to environmental changes than others. For example, rising temperatures and shorter winters due to global warming negatively impact the companies that rely on snow for their products, such as ski manufacturers.

Norway is a country with difficult geological characteristics when it comes to development of cities and infrastructure. This is because of fjords, mountains and difficult ground conditions. In order to successfully manage projects under these conditions degree of specialization and skills are required. This is an opportunity, but also a barrier of entry, because operating in the Norwegian civil engineering and construction market puts tough demands on the industry players. This will be further elaborated in the VRIO-analysis.

#### *5.1.6 Legal*

Legal factors have both internal and external sides. Internal legal factors narrate around certain policies that companies maintain for themselves. External legal factors are laws related to antitrust, consumer laws and labor laws. For the civil engineering and construction industry the following factors are especially important; labor laws and the public procurement process.

#### 5.1.6.1 Labor Laws

The revised Norwegian Working Environment Act came into force in 2006 and says that every employer is obliged to treat their employees according to a set of laws. These laws consist of demands put on health, safety, working hours, discrimination and that work is meaningful. The construction and civil engineering industries are very susceptible to failures in complying with this law. The construction industry in particular has been subject to numerous incidents regarding poor working conditions and lethal accidents (Nrk, 2016). The industry players are thus required to follow the labor laws, or face legal consequences and/or problems with recruitment of workers.

#### 5.1.6.2 Public Procurement Process

The public procurement process is a directive from the European Union. Public procurement refers to the process by which public authorities, such as government departments or local authorities, purchase work, goods or services from companies. Examples include the building of a state school, purchasing furniture for a public prosecutor's office and contracting cleaning services for a public university (EC). Although Norway is not a member of the EU, it is a member of the EEA agreement, and is obliged to follow current and future EU directives. The law says that all government contracts, or those contracts where the government pays more than 50 % through subsidies are obliged to issue a public bidding process. It also requires that the labor laws are followed. The most important factor about the public procurement process is that the offer presenting the most economic benefit wins. Effectively deciding the bidding process based on price, and can only be rejected if the offer is unrealistic in terms of satisfying the terms of the contract.

### 5.2 Porter's Five Forces

To get a glance of how attractive one industry is, Michael Porter introduced a framework in 1979. Porter argued that industry attractiveness is dependent on five factors; three horizontal and two vertical, which together determines the ultimate competitive market atmosphere. The horizontal factors are competition from substituting products, the threat of new entrants and rivalry among existing competition. The vertical factors are bargaining power from both suppliers and customers. This framework creates an understanding of the current profitability within the particular industry and creates a fundament for forecasting, as these forces affect costs, prices and investments required to compete (Investopedia, u.d.).

### 5.2.1 *Threat of New Entrants*

When new companies enter, they bring new capacity to the industry, and if the capacity added exceeds growth in demand, this reduces profitability. Their desire to gain market share often puts pressure on costs, prices and the amount of investments necessary to compete. Consequently, this force is argued by Greenwald & Kahn to be the single force enabling comparative competitive advantage, and is the most dominant force (Greenwald & Kahn, 2005, s. 3).

#### 5.2.1.1 Economies of Scale

AF Gruppen and its main peers are mostly considered as large companies with significant capacity, making it hard for new entrants to compete right away. Moreover, large companies tend to profit from economies of scale, further reducing the threat from entrants. From our point of view, new entrants have two choices when entering this market. Either penetrates the market with large scale, and thereby faces the risk that existing firms will compete and prevent the entrant from achieving a successful entrance, or agree taking smaller and less profitable market shares by entering with minor scale.

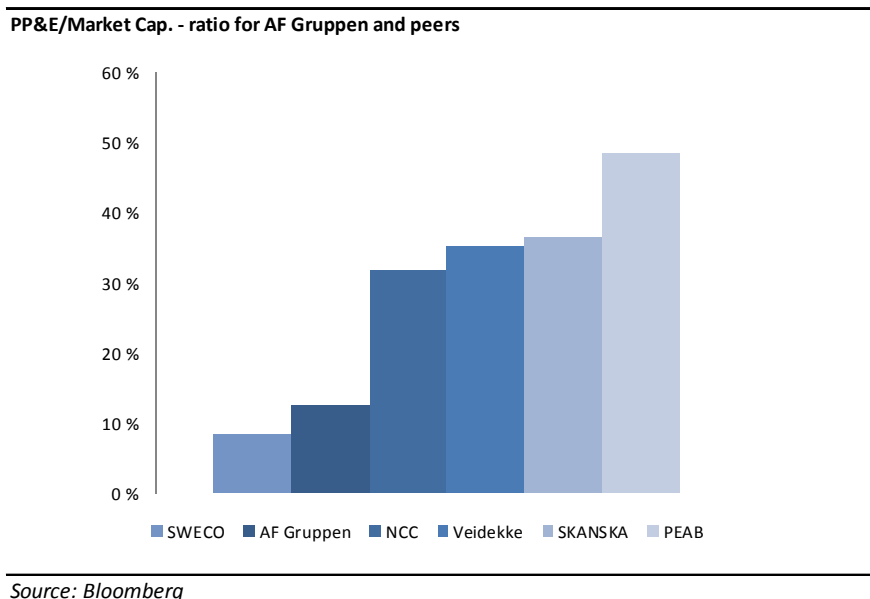
#### 5.2.1.2 Product Differentiation

AF Gruppen is operating in industries with somewhat homogeneous products in terms of services provided. Therefore, reputation, agreements with suppliers and the ability to deliver superior service is, among others, what differentiate the products provided by AF Gruppen and its peers. We consider this point to be a solid barrier for new entrants, as reputation and superior agreements takes time- and is difficult to achieve.

#### 5.2.1.3 Capital Requirements

In order to compete in these markets, a substantial amount of capital is required. Big projects include costs related to planning, materials, machines, a vast workforce etc., which might be a substantial barrier for the entry firm. The property, plant and equipment to market capitalization –ratio for AF Gruppen and its competitors verifies this. Even though AF Gruppen and Sweco have a rather low ratio the sample shows an average of 29%. By excluding AF Gruppen and Sweco the same number is 38%, which tells us that 38% of the market cap, on average, is PP&E.





**Figure 8: PP&E/Market cap. for AF Gruppen and peers**

#### 5.2.1.4 Switching Costs

In most cases, switching costs refer to the fixed costs that buyers face when changing suppliers. Clients of AF Gruppen and its peers might profit from valuable agreements with their sub-contractors, which may lower the total cost of the project. Hence, clients will most likely experience change in cost structure by switching from one supplier to another, regardless if it is a new entrant or not, as every company tend to have unique supplier agreements. However, it would be reasonable to argue that switching costs are higher by switching from a solid company to a new entrant.

Considering the discussed aspects and the fact that AF Gruppen is competing in relative mature businesses with stable cash flows and solid reputation, the threat of new entrants is considered low. However, the Schengen Agreement and the government's procurement process enable big established international contractors to enter the Norwegian market. These international contractors tend to be larger in size and might have access to less expensive labor. Nonetheless, we consider Norwegian entrepreneurs to have an advantage, drawing on home turf synergies such as no language differences and more extensive sub-contractor network. Contracts awarded to local entrepreneurs and contractors pose a more direct infusion of money into the Norwegian economy, further backing the home turf advantage.

### *5.2.2 Suppliers Bargaining Power*

The strength of suppliers bargaining power relies on several factors, including concentration of suppliers, switching cost, the extent to which suppliers relies on revenues from the industry and whether the products are differentiated. Within the construction industry there exist, as mentioned, similar companies offering similar products and services, therefore we consider the product differentiation to be low. Nonetheless, some unique projects need special skills and materials, causing the product differentiation in such projects to be quite high.

For the construction industry, one look at two different suppliers, namely sub-contractors and the prime contractors.

#### *5.2.2.1 Sub-Contractors Bargaining Power*

When an industrial company enters into an agreement for a project they rely on different sub-contractors. AF Gruppen has made a Supplier Declaration, which outlines important factor when considering sub-contractors. The company will, based on the nature of the project, collect tenders from different sub-contractors, which are hired for different purposes (AF Gruppen, u.d.). Either because they are in possession of special skills, or hired to develop safety rules and practices on building sites, delivering materials needed, electricians, frameworks etc. Even though there exists many sub-contractors, each prime contractor is heavily dependent on a good relationship with their sub-contractors. This in turn makes us argue that their bargaining power in some situations is considered fairly high. For instance, a sub-contractor with a special skill may have greater bargaining power; while a company delivering general materials may have less bargaining power. Special skills might be the ability to implement unique solutions needed for one project, making the construction work more efficient and flexible.

#### *5.2.2.2 Main Contractors Bargaining Power*

As stated, the construction industry is characterized by large companies and AF Gruppen's income is heavily reliant on the revenues extracted from the industry in question, which lower the bargaining power of such companies. However, the client is dependent on both sub-contractor and the main contractor, as the end-customer may profit from choosing a company with good supplier agreements, which possibly can lower the total price of the project. Also, for extraordinary projects, the concentration of suppliers is fairly low due to the need for unique, flexible and solid solutions demanded by customers, as well as good reputation. Therefore, we

can argue that for complex big projects, prime contractors with unique supplier agreements and a solid reputation will have high bargaining power.

### *5.2.3 Customers Bargaining Power*

Bargaining power for customers is affected by the number of buyers, their price sensitivity, related switching cost and product differentiation. Customers' price sensitivity is considered moderate to high, as large projects tendered by large companies is mostly based on concrete budgets. In addition, switching costs may be substantial in mature markets, as AF Gruppen and its main peers have achieved unprecedented agreements with suppliers and sub-contractors. It can be argued that such agreements and employees with special skills differentiate the product delivered. However, it is difficult to argue that the product differentiation is substantial within this industry.

AF Gruppen and its peers obtain contracts for execution of projects through a tendering process. It is common policy that clients invite potential contractors to attend this tendering process, and usually the contractor with the lowest priced offer is awarded the contract. Due to this tendering process we can argue that the bargaining power of AF Gruppens customers, on average, is considered moderate.

### *5.2.4 Threat of Substituting Products*

To address what might be able to substitute services provided by companies like AF Gruppen, one should look at what the customer wants to achieve. Customers of companies like AF Gruppen wants to a large extent, realize highly complex projects, causing the inputs needed to be difficult to substitute. We therefore consider the threat of substituting products to be low.

### *5.2.5 Rivalry Among Existing Competitors*

Porter argues that the degree of rivalry among existing competitors is high when the industry consists of many competitors or rivals are of equal size and power, the industry is experiencing slow growth and the industry is characterized by high exit barriers due to excess capacity and firms acting irrationally. Strong competition is especially destructive for profitability as it shifts profits from the industry over to the customer (Wilkinson, 2013).

The Norwegian construction market is still very fragmented, with few dominant companies often being the prime contractor of large projects. In fact, in 2014 the

top three prime contractors only had a market share of 15%, while the top 100 contractors held a market share of 50%. In addition, combined with an increasing population, this industry is experiencing regularly technology development leads to ongoing growth that will mostly never reach a complete decline stage. As already stated, AF Gruppen is located in a mature industry with substantial exit barriers, coming from the large amount of invested capital. Furthermore, large state agencies are important clients and price is an important aspects when large contracts are awarded, leading us to conclude that AF Gruppen operate in a tough competitive environment.

### 5.3 VRIO – Analysis of Firm-Specific Resources

This section will use a framework provided by Barney (1991), looking further into the firm-specific resources of AF Gruppen. Barney introduced this framework as a model to identify sustainable competitive advantages. The framework originates from a resource-based view which involves two important assumptions. First, it is built upon the assumption that companies may be heterogeneous concerning their resources. Second, it assumes that the resources are stationary, and hence, the heterogeneity can be sustained. In addition, for a company to accomplish sustainable competitive advantage, Barney and Hesterly argue that four conditions have to be fulfilled. These four conditions include whether or not the resource are valuable, rare, inimitable and/or efficient utilized (organization) (Barney, 1991). We thereby need to evaluate the abovementioned factors to determine whether these conditions are fulfilled in AF Gruppen's case.

#### 5.3.1 Reputation

AF Gruppen is benefiting from strong reputation, and has, during their history, been responsible for several complex projects. Furthermore, AF Gruppen is experiencing an increasing influx of qualified employees, which may in turn be extremely valuable for the firm and also protect the company from threats (AF Gruppen, 2016, s. 13). However, they have several strong homogenous competitors offering similar products and services. Hence, AF Gruppen is dependent delivering on both quality and prices towards constantly being able to compete in various tendering processes.

#### 5.3.2 Qualified Employees

AF Gruppen and peers differentiate themselves from competitors through the ability to construct unique processes for customers, making the project planning

more efficient for every party involved. We hereunder refer to how the processes is planned and implemented by AF Gruppen's employees. AF Gruppen is constantly investing a lot of resources to educate highly skilled employees through training programs, such as AF Academy. This enables AF Gruppen to guide their employees through the whole production cycle, making them capable of serving the customer with both the knowledge and ability to perform complex tasks (AF Gruppen, 2017).

### 5.3.3 *Culture*

In order to maintain a strong position in the market, AF Gruppen is heavily reliant on a strong culture. They are the only company within the industry that operates with employee share purchase program, and has since it entered the market seen the importance of employees owning a stake in the company. This may lead to more motivated employees, which in turn potentially can have a positive effect on the culture in the company. In addition, today more than 80% of the managers are recruited internally within AF Gruppen, which gives the company good continuity (AF Gruppen, 2016, s. 13). Nowadays, culture is becoming more important, not just for the company itself, but also for investors. East Coast Asset Management says the following: "we value the important truth that almost any advantage can be copied away eventually and that the only truly sustainable long-term competitive advantage lies in the culture of the business" (East Coast Asset Management, 2015, s. 8). Even though AF Gruppen writes about their continuous work on building a strong, common culture, it is hard to quantify whether or not this is true.

### 5.3.4 *Physical Resources*

As previously mentioned, AF Gruppen operates within highly capital intensive business areas with rather low product differentiation. Therefore, all the technical attributes and machinery needed are accessible for every firm with sufficient capital. Hence, we consider the physical resources used in projects to be less valuable simply because they do not contain any attributes only available for AF Gruppen. In addition, Barney argues that the resource is also deemed valuable if it can protect the business from threats and help them exploit external opportunities (Barney, 1991, s. 106). However, we consider resources and machines used to be extremely costly, leading to a conclusion that such resources cannot be bought or subsidized at a reasonable price.

With regards to the tendering process we can conclude that AF Gruppen is mainly competing on prices. It may also be reasonable to confirm that there exist a low degree of rarity in AF Gruppen's resources due to the entry of foreign companies operating in Norway (Follobanen), as this proves that the resources is simple to transfer from one market to another.

Summary of VRIO					
Resource/ Capability	Valuable?	Rare?	Inimitable?	Organized Properly?	Competitive Implication
Reputation	√	√	X	√	Valueable, but not rare or inimitable
Qualified Employees	√	X	X	√	Crucial, but not inimitable
Culture	√	√	√	√	Rare, inimitable and extremely valuable
Physical Resources	X	X	X	√	Organized properly, but not rare nor inimitable

Source: Authors' Compilation

Figure 9: Summary of VRIO

## 6. Financial Analysis

### 6.1 Reformulation of Financial Statements

Traditional financial statements-the income statement, balance sheet, and statement of cash flows-do not promote easy insights into operating performance and value (Koller, Goedhart, & Wessels, 2015, s. 165). The balance sheet mixes together operating assets, non-operating assets, and sources of financing, whilst the income statement similarly combines operating profits, interest expense, the amortization of acquired intangible assets, and other non-operating items. This is an obstacle that needs to be handled not only to value the company, but also, as discussed in chapter 3 to properly analyze AF Gruppen's ROIC and WACC.

To prepare AF Gruppen's financial statements for the task-at-hand we need to reorganize the items on the balance sheet, income statement and statement of cash flows into three categories: operating items, non-operating items, and sources of financing (Koller, Goedhart, & Wessels, 2015, s. 165). By doing this we can more easily and precisely analyze AF Gruppen's financial wellbeing, and at the same time identify non-recurring items, not to be included in our forecasting of free cash flow.

### 6.2 Profitability Analysis

To look further into the profitability of AF Gruppen, we're well served by investigating segment performance. This is in order to identify which business

segment has had the largest impact on past financial performance. As seen in figure 5, the Civil Engineering and Building segments generate the largest amount of revenues for AF Gruppen, and in the last couple of years, the associated EBITDA-margins have improved drastically. Although the margins in the building, energy and offshore segments vary somewhat, due to e.g. the offshore segment operating in a cyclical industry, the overall margin improvements in the segments with 80%+ of total revenues has helped improve AF Gruppen’s results.

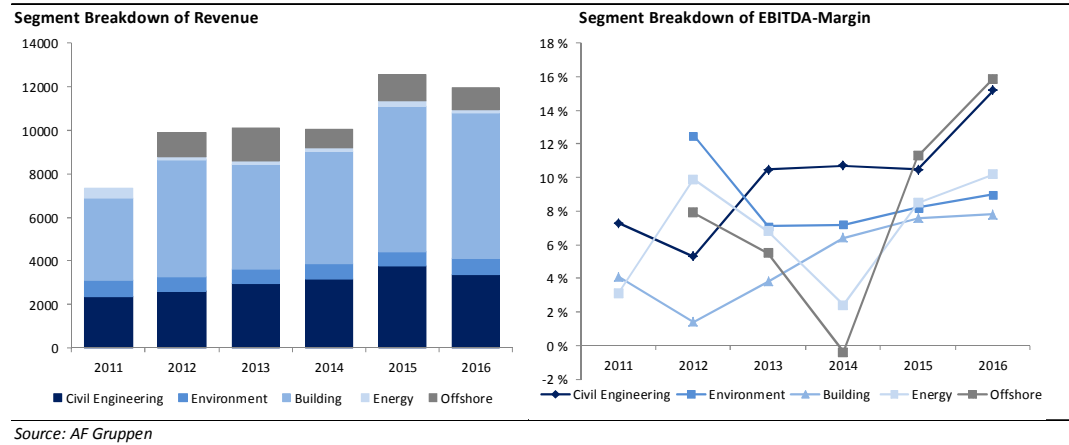


Figure 10: Segment - breakdown of Revenue and EBITDA - margin

Compared to peers, total EBITDA-margin has been much better for AF Gruppen during the last three years overall as well, illustrated in figure 13.

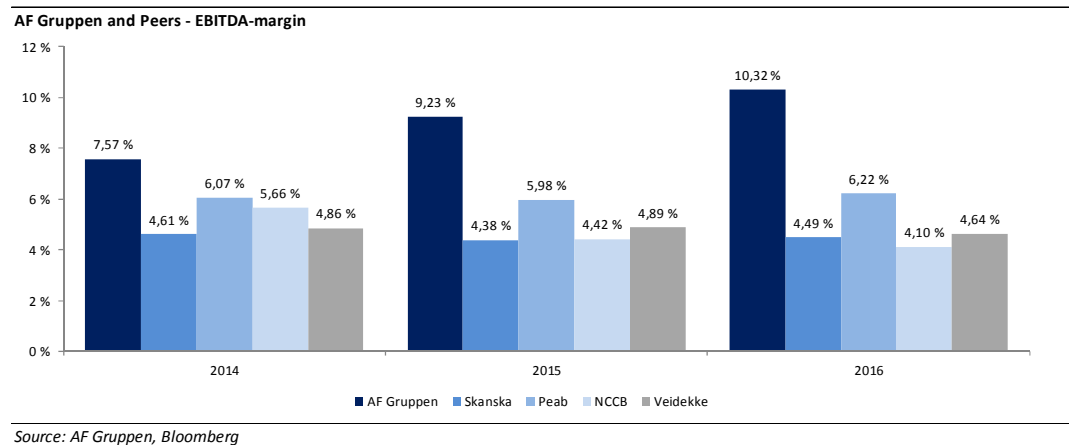


Figure 11: AF Gruppen and Peers - EBITDA - margin

In order to get a further grasp of the efficiency of AF Gruppen compared to peers, we will look into the metrics asset turnover (ATO) and profit margin (PM).

The profit margin is calculated as net income divided by total revenue and in practice tells us how much out of every dollar of sales a company actually keeps in earnings (Investopedia). With this metric we are able to say something about the

cost level of the companies and an indication of who has the most effective organization with the best relationships with subcontractors and suppliers. Asset turnover ratio is the ratio of the value of a company's sales or revenues generated relative to the value of its assets. The Asset Turnover ratio can often be used as an indicator of the efficiency with which a company is deploying its assets in generating revenue (Investopedia).

AF Gruppen and Peers - Profit Margin									
Profit Margin	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>AF Gruppen</b>	<b>3,70 %</b>	<b>5,07 %</b>	<b>4,82 %</b>	<b>4,05 %</b>	<b>2,01 %</b>	<b>4,25 %</b>	<b>4,47 %</b>	<b>5,65 %</b>	<b>5,87 %</b>
Skanska	2,16 %	3,03 %	3,29 %	6,39 %	2,21 %	2,76 %	2,68 %	3,12 %	3,94 %
Peab	3,20 %	3,74 %	3,12 %	2,17 %	1,56 %	0,69 %	2,35 %	1,80 %	3,73 %
NCCB	3,15 %	2,95 %	3,08 %	2,49 %	3,33 %	3,43 %	3,23 %	3,98 %	-
Veidekke	3,15 %	3,14 %	2,19 %	3,60 %	2,66 %	2,50 %	3,51 %	3,15 %	3,10 %
<b>Average, including AF Gruppen</b>	<b>3,07 %</b>	<b>3,59 %</b>	<b>3,30 %</b>	<b>3,74 %</b>	<b>2,35 %</b>	<b>2,73 %</b>	<b>3,25 %</b>	<b>3,54 %</b>	<b>4,16 %</b>

Source: AF Gruppen, Bloomberg, Authors' Compilation

**Table 4: AF Gruppen and Peers - Profit margin**

As seen above, AF Gruppen has steadily delivered the best profit margin compared to the other companies in the peer group. Being able to outperform competitors in terms of margins in a highly competitive industry is as impressive as it's difficult. In order to attain a high profit margin, one would need a good relationship with subcontractors and suppliers in order to keep cost down. In addition to this, one might be able to charge a premium compared to peers. However, recall from the PESTEL analysis that government contracts are won with the lowest bid, making it less likely that AF Gruppen is able to charge a premium for their services, especially with regards to government contracts.

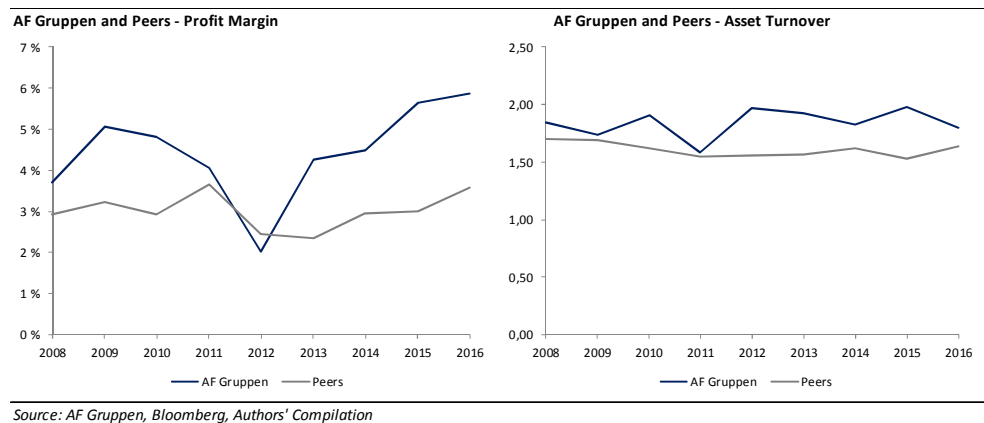
AF Gruppen and Peers - Asset Turnover									
Asset Turnover	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>AF Gruppen</b>	<b>1,84</b>	<b>1,74</b>	<b>1,91</b>	<b>1,58</b>	<b>1,97</b>	<b>1,93</b>	<b>1,82</b>	<b>1,98</b>	<b>1,80</b>
Skanska	1,72	1,66	1,57	1,43	1,47	1,56	1,54	1,57	1,36
Peab	1,33	1,34	1,38	1,39	1,46	1,35	1,54	1,58	1,47
NCCB	1,59	1,75	1,59	1,60	1,52	1,49	1,46	1,35	2,09
Veidekke	2,16	2,03	1,95	1,79	1,77	1,87	1,94	1,64	1,64
<b>Average, including AF Gruppen</b>	<b>1,73</b>	<b>1,70</b>	<b>1,68</b>	<b>1,56</b>	<b>1,64</b>	<b>1,64</b>	<b>1,66</b>	<b>1,62</b>	<b>1,67</b>

Source: AF Gruppen, Bloomberg, Authors' Compilation

**Table 5: AF Gruppen and Peers - Asset Turnover**

Tabulated in table 5 we see that AF Gruppen's asset turnover is slightly above the average of the company and peers. However, it becomes clear that the area in which AF Gruppen has been able to differentiate themselves from peers is with their profit margin, with the exception of 2012. See figure 14, for further backing of this, where it's seen that ATO more closely track that of peer average whilst PM is much better, especially in the last couple of years.





**Figure 12: Profit Margin and Asset Turnover Compared with Average of Peers**

This is information we will bring with us into the forecasting of AF Gruppen's income statement, balance sheet and cash flows.

### 6.3 ROIC Analysis With and Without Goodwill

According to Koller et. al. ROIC should be computed both with and without goodwill and acquired intangibles, because each ratio analyzes different things. Without goodwill, ROIC measures the underlying operating performance of a company. It tells you whether the underlying operations generate ROIC above the cost of capital. ROIC with goodwill tells measures whether the company has earned adequate returns for shareholders, factoring in the price paid for acquisitions (Koller, Goedhart, & Wessels, 2015, s. 203).

Earlier, by looking at AF Gruppen's ROIC with goodwill, we immediately noticed that it's high relative to peers, and the gap between ROIC and WACC is large, to be discussed in further detail in chapter 11. By removing Intangible assets/Goodwill from invested capital, it becomes clear that AF Gruppen has negative invested capital (except in 2014). What this means in practice is that their negative net working capital is larger than their tangible assets, in this case PP&E. Negative working capital occurs when current liabilities exceed current assets. This means that AF Gruppen use high operating leverage, and are thus able to fund their operations on good relations with their suppliers. High operating leverage typically appear because long-term contract companies like AF Gruppen often has high deferred revenue balances, which is unearned revenue that AF Gruppen receives in advance from its customer in exchange for the service provided in the future (Kumar, 2016, s. 129). Deferred revenue is treated as a current liability,

consequently reducing the net working capital. A decrease in working capital signal inflow of cash, while an increase signals outflow of cash (Kumar, 2016, s. 128).

As long as NOPLAT is positive, negative invested capital results in a negative ROIC, which may seem like a concept that's hard to grasp. However, a company with negative ROIC and invested capital still creates value. Recall EVA and equation 3, still yields a positive result and the company still creates value.

Even though ROIC excluding goodwill is a little more volatile than ROIC including goodwill, we conclude with the fact that AF Gruppen has been able to exploit operational synergies from their acquisitions, still factoring in the price paid for those acquisitions.

#### 6.4 Credit Analysis

In this section we will look further into the credit worthiness of AF Gruppen by conducting a credit analysis following the framework provided by Standard & Poor. In the end, we will arrive at a shadow rating of AF Gruppen; our opinion of where AF Gruppen belongs on the rating scale. By assessing a number of profitability ratios, found in table 6, we end up with a shadow rating based on the criterion presented by Standard & Poor.

<b>AF Gruppen - Liquidity and Cash Flow Ratios</b>				
	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Current ratio	0,91	0,78	0,62	0,67
Quick ratio	0,82	0,69	0,55	0,62
EBIT Interest Cover	71	33	27	54
EBITDA interest cover	85	40	31	64
Operating Cash Flow/ Total Liabilities (%)	26 %	2 %	33 %	18 %
Return On Invested Capital incl. GW (%)	74 %	35 %	70 %	57 %
Total Liabilities/ Total Capital (%)	74 %	72 %	70 %	70 %
EBIT Interest Cover	AAA	AAA	AAA	AAA
EBITDA interest cover	AAA	AAA	AAA	AAA
Operating Cash Flow/ Total Liabilities	AA	BB	AA	A
Return On Invested Capital incl. GW	AAA	AAA	AAA	AAA
Total Liabilities/ Total Capital	B	B	B	B
Yearly Rating	AAA	AA	AAA	AAA

*Source: Authors' compilation based on data from AF Gruppen and Bloomberg*

**Table 6: Liquidity Ratios**

From table 6 it is evident that AF Gruppen has a financial ratio that corresponds to an AAA rating in 2015, which is considered the highest rating assigned by Standard and Poor's. The financial situation is thus extremely strong, and the company has adequate capacity to meet its financial commitment (Standard and Poor's, 2001). However, we are apparently aware of the weak current ratio, but as most of their current liabilities stems from unearned revenues received in advance of a project, we consider this low ratio to represent future growth.

## **7. SWOT**

In the next section, we will tie together the most important findings from the strategic and financial analysis by applying the SWOT-framework (strengths, weaknesses, opportunities and threats). Throughout chapter 5 and 6 we have identified and analyzed how industry structures and social factors affect the overall profitability of the industry where AF Gruppen is present. Additionally, we have revealed internal factors that help better explain AF Gruppen's recent financial performance. The analyses are essential as it gives us important information to our forecasting, as we will have a better understanding of significant value-drivers of the company.

By employing the SWOT-framework, which mixes both external and internal factors, we can do a sensible evaluation of AF Gruppen's opportunities and threats (external factors) and strengths and weaknesses (internal factors). By doing so, the most important findings from the PESTEL-, Porter's Five Forces as well as the VRIO-analysis are summarized in one section. This gives us an overview of the possibilities and challenges AF Gruppen face.

SWOT	
Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- Skilled management, capable of timing acquisitions</li> <li>- High switching cost for more solid companies protect AF Gruppen from new entrants and further reduce bargaining power of customers</li> <li>- Strong culture and high employee satisfaction.</li> <li>- Difficult ground conditions demand high degree of skills, further decreasing threats from new entrants.</li> <li>- Steadily delivered better profit margin than peers</li> <li>- Very strong liquidity</li> </ul>	<ul style="list-style-type: none"> <li>- Operating in businesses with low degree of rare resources</li> <li>- Diversified segment portfolio may diverge management focus</li> <li>- Susceptible to potential downturn in the Norwegian economy</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>- Positive market outlook based on the Norwegian Transport plan, with proposed annual spendings of NOK 78bn in 2018-2029</li> <li>- Exploiting new technology that can enhance i.e. earnings efficiency</li> <li>- Increased demand for housing</li> </ul>	<ul style="list-style-type: none"> <li>- Decreased overall investment sentiment due to increased interest rates</li> <li>- Threat from foreign competitors</li> <li>- Students applying for craftmanships decreasing</li> <li>- Rivalry among existing competitors</li> </ul>

Source: Authors's Compilation

**Figure 13: SWOT**

To sum up, the SWOT shows that AF Gruppen has several strengths that support for a strong growth and protection going forward. For instance, skilled management which has shown great abilities timing acquisitions is an important strength that differentiates AF Gruppen from its peers. In addition, AF Gruppen benefits from higher profit margins than peers, and has adequate capacity to meet its financial commitment, leading to an AAA credit rating.

Lastly, we have identified two possible weaknesses for AF Gruppen. One weakness arises due to the fact that AF Gruppen has such high diversified segment portfolio. Such high diversification makes it more difficult monitoring the company appropriately. Second, one cannot omit to mention that they are susceptible to potential downturn in the Norwegian economy.

## 8. Forecasting

As the DCF rest on future cash flows, we will in the next section make necessary prognostications of AF Gruppen's performance in order to reach good value estimates. Conducting an inaccurate forecasting will directly lead to wrong value estimates, which is why this section is considered to be one of the most important parts of our thesis. Additionally, the forecasting will have its ground in the strategic and financial analysis, combined with macroeconomic projections such as population and market conditions going forward.

Following Koller et al. we will break our forecasting process into six steps. First we will prepare our analysis based on historical financials by using financials from AF Gruppen's annual reports. Secondly, we will use a top-down forecast to make our revenue forecast. The top-down method estimates revenue by sizing the total market and forecasting prices. The third step is related to the prediction of the income statement. Step 4 is to forecast the balance sheet. Lastly, we are able to calculate the forecasted ROIC to see whether AF Gruppen will be able to sustain its high ROIC in the future, trend toward the industry median or converge towards its WACC. This step also includes the calculation of FCF, which will be used for our DCF in chapter 9.

### 8.1 Revenue Forecasting

As of today, 70% of the revenues of AF Gruppen stems from the procurement of goods and services. AF Gruppen is responsible for the entire value chain for most of their projects, making them able to profit from every step during a project. As AF Gruppen is present in relatively mature business areas, the aggregate market shows slow growth and is closely tied to economic growth and other long-term trends. In 2016, the Corporate Management Team prepared a new corporate strategy for AF Gruppen between 2017 and 2020. The goal is to reach a total revenue of NOK 20 billion by 2020, and the strategy encompasses investments in major cities in Norway and Sweden, nationwide and mobile project operations and offshore. Additionally, they plan to expand the AF family by up to 2.000 new employees.

As mentioned earlier, AF Gruppen delivered a record high order backlog for 2016, which will be an important aspect of our forecast of the revenue forecast and secures healthy prospects ahead. Due to smaller stakes stems from other segments than building and civil engineering, we have mainly focused on these two areas during our revenue forecast. We expect AF Gruppen will experience improvement in their revenues for both building and civil engineering, grounded on an historical order backlog-growth of 5% and 7%, respectively. This order backlog-growth is in line with what we revealed in our PESTEL-analysis related to increased annual spending through NTP 2018-2029, of which figure 6 shows has been in favor of the company's order backlog. Additionally, we assumed a backlog conversion of 90% for both the civil engineering and building segment in 2017 and 2018, meaning that 90% of the order backlog for these segments is included in their revenues for 2017

and 2018. In 2016 the backlog conversion for the building and civil engineering segment was 79% and 60%, respectively. For the other segments, we expect an overall revenue growth of 2%, as the other segments has experienced variations in performance. Environment segment experienced great variations in project results throughout 2016, Property benefitted from price growth in Greater Oslo, which may be more uncertain going forward, and the Energy segment experienced lower than expected order intake, causing us to have slight more pessimistic and uncertain forecasts related to these segments.

## 8.2 Forecasting Income Statement

We must hereunder decide what economically drivers that are tied to the income statement, and furthermore what drives the item in question. To estimate forecast ratios, we computed historical ratios for each value, and used an average of the calculated historical ratios as forecast ratios. I.e. growth in subcontractors' expenses is calculated by using the average historically subcontractor/revenue-ratio.

Due to the planned expansion of 2.000 new employees by 2020 we expect an 88% increase in payroll costs from today's level. We are assuming the salary growth will be 1,5%, following the year-on-year earnings increase the last year, with a total payroll cost of NOK 4,985 billion by 2021. Net income in 2020 will be equal to NOK 1,345 billion, an increase of 71% from 2016.

## 8.3 Forecasting of the Balance Sheet

We first forecasted invested capital and nonoperating assets such as PP&E, intangible assets, investments in joint venture and other non-current financial assets. PP&E was forecasted by taking the PP&E for previous year less depreciation and write downs, other investing activities and added CapEx. Other non-current financial assets were forecasted by using a 1,3% fraction of total OPEX, which is an historical average. Moreover, the most of the remaining items in the balance sheet were forecasted using the direct method, also known as the stocks approach. This method is using the end-of-year item as a function of volume measures, such as total revenues, total OPEX and cost of sales. For instance, our forecast for the end-of-year receivables was calculated as a function of revenues. Current assets were forecasted by using the historical average.

However, we do not expect much change in AF Gruppen's intangible assets. The intangible assets are calculated by taking the intangible assets last year less

amortization for the year. The intangible assets of the company experienced a significant increase of NOK 719 million from 2014 to 2015, mainly caused by substantial goodwill achieved from the acquisition of LAB and Målselv Maskin & Transport (AF Gruppen, 2016, s. 147). We have estimated that the intangible assets will be stable going forward, grounded on no information stating that AF Gruppen will expand any soon combined with stable amortizations.

#### 8.4 Forecasting of Cash Flow Statement

When it comes to different drivers of the cash flow statement we have both used historical averages as well as taken into account what AF Gruppen seeks to achieve going forward. Depreciation and amortization were forecasted by using the historical average. CapEx, however is calculated as a percentage of revenues and will experience an increase to support for planned growth. After 2017 we expect to see a downward CapEx-trend, with an average CapEx of 1,5% compared to the historical average of 1,21%.

With regards to their dividend policy we have considered the goal of AF Gruppen, which is to pay out minimum 50% of net income as dividend. However, during previous years, their payout ratio shows an average payout of 96%, causing us to have slight higher estimates for their future payout ratio. We expect AF Gruppen to pay out 80% of its net income during our forecast period, with a total dividend payout of NOK 1076 million in 2020, compared to today's payout of NOK 744 million. Even though this is a significant dividend increase, the company will still have a healthy and somewhat stable ending cash during this forecast period.

#### 8.5 Forecasting of Construction Industry

We believe the prospects for growth for civil engineering and building in Norway and Sweden are good. Development in the markets where AF Gruppen has its operations is characterized by economic fluctuations, and the general combined growth in building and civil engineering has been 3% per year, with a stand-alone investment of 6% within the civil engineering. These investments are not expected to stagnate during the period until 2020. However, Sweden has experienced greater investment growth than Norway. According to The European Commission, the overall Swedish investment growth for construction between 2015 and 2016 has been 7%, which has mostly been a result of residential building around the largest cities (EU Commission, 2017). AF Gruppen itself expects that this high investment

level will decline to 5% annually in the future (AF Gruppen, 2017, s. 18). The report provided by The European Commission is less optimistic, and expects an annual investment growth of 3% (EU Commission, 2017).

Additionally, AF Gruppen states that they experience the fastest growth in major cities, and will also expect the greatest growth to be around these cities years to come. In Norway, AF Gruppen will mostly focus on Greater Oslo and Greater Bergen. The company has established a solid position in Oslo, which is growing rapidly and includes a great opportunity for AF Gruppen to further grow organically. In addition, AF Gruppen is well established in Bergen, of which they see the potential of gaining a greater market share in the future. Through the acquiring of LAB late 2014, the company got an important toehold within the building area, which facilitates for growth opportunities in the future. With regards to Sweden, AF Gruppen has also been able to strengthen their position, of which they see Gothenburg and Stockholm as the most interesting markets. AF Gruppen has a solid position in the former city, but also sees a potential and a need to further strengthen this position. In Stockholm however, the company has limited positions, and stresses the importance of reinforce their standing in this area, of which they see a great possibility of high growth going forward (AF Gruppen, 2017, s. 18).

Moreover, according to Statistics Norway and Statistics Sweden, Norway and Sweden will surpass a population of 5,9 million and 11 million, respectively by 2031 (SCB, 2017). This entails increased pressure on the existing infrastructure, and an increased need for residential and non-residential buildings in the major cities. This leads to the need of even greater investments in property, buildings, transport and infrastructure, beneficiary for AF Gruppen.

### 8.6 Quality of Forecasting

Throughout our forecasting we have mostly focused on historical averages. Consequently, any deviation from the historical averages has been supported by reflective arguments as well as an underlying understanding of the business in question. Additionally, “unbiased” estimates have been focused upon, meaning that our estimated driver is not projecting too high or too low. By doing so, we aim to have an estimated driver that is equally likely to be above or below the actual driver. Although our overall forecasted profitability improvements show a rather optimistic view, we have throughout this paper argued why this is the case.



## 9. Cost of Capital

As a general expression, the discount rate is supposed to represent the opportunity cost an investor is facing by investing in one specific business instead of another business that includes similar risk. When referring to investors, one talk about both equity and debt holders, which is why the discount rate represents a weighted average of these two classes' required rate of return, the previously introduced WACC.

### 9.1 Risk Free Rate Estimation

The risk-free rate is the starting point for all expected return models, and captures the return if you invest within a period without taking any risk. Such assets must fulfill two conditions: first, the asset must have zero default risk, which rules out any security issued by private firms, since even the largest and safest firms include some default risk. The second condition is that there cannot exist any reinvestment risk.

Due to recent year's low interest rate-regime, some practitioners now employ a normalized risk free rate instead of interest rate on government bonds. This is because many believe the low interest rates of today are not representable for use in the calculation of the terminal value of a company because interest rates are expected to rise in the future. We support this view and use and will use a normalized risk free rate of 3 %, as reported in and 10 year interest rate on government bonds of 1,42 % in the discount rate for the forecasted years (PwC, 2016).

### 9.2 Estimating the Equity Beta

According to CAPM, a stock's expected return is driven by the beta, which measures the price volatility of securities on the overall market. It can also be expressed in the following way  $\beta_i = \frac{Cov(r_s, r_m)}{\sigma_m^2}$  where,  $Cov(r_s, r_m)$  is the covariance between the specific stock compared to the general market and  $\sigma_m^2$  is the market variance. Since beta cannot be observed directly, one must estimate its value. The procedure is as follows; we first measure a raw beta using simple linear regression and then improve the estimate by using industry comparables. The most common regression used to estimate the raw beta is the market model:

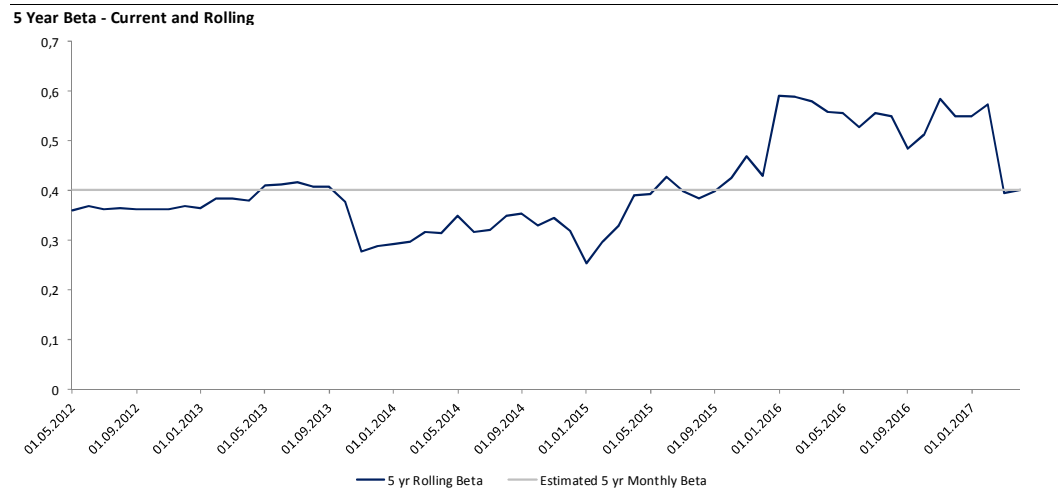
$$R_i = \alpha + \beta R_m + \varepsilon$$

Equation 5: Market Model

where the stock return,  $R_i$  is regressed against a proxy of the return of the market portfolio (Koller, Goedhart, & Wessels, 2005, s. 312).

In order to do a suitable estimation of the raw beta, three points should be considered. First, raw regressions should at least use 60 data points (e.g., five years of monthly returns). Moreover, rolling betas should be graphed to examine any systematic changes in stock's risk. Second, in order to have unbiased results, raw regressions should be based on monthly returns. By using shorter returns, you will face the risk of ending up with biased results caused by much volatility. Lastly, the company stock returns should be regressed against a proxy for the market portfolio. This should be a value-weighted, well diversified portfolio, representing as many relevant securities and assets as possible (Koller, Goedhart, & Wessels, Valuation: Measuring and Managing The Value of Companies, 2005, s. 314). According to AF Gruppen's 2016 annual report, over 90 % of revenues stem from Norway. In addition to this, over 80 % of shareholders are located in Norway and because the required return on capital is applied by the investors and not the company itself, the proxy for the market portfolio should have connections with most of the shareholders. Based on this, we have chosen to apply the Oslo Stock Exchange Benchmark Index (OSEBX) as the proxy for the market portfolio. This index is a value weighted representation of 62 (as of 21.04.2017) companies listed on the Oslo Stock Exchange and is a total return index, meaning dividends are assumed re-invested in the index on the ex-dividend day. This is more representative of real returns because price indices ignore dividends and reel out returns that should have been included.

When the logarithmic returns of AF Gruppen is regressed against the logarithmic returns of the OSEBX we arrive at a raw beta of 0,4018.



Source: Bloomberg, Authors' Compilation

Figure 14: 5 Year Beta - Rolling and Current

AF Gruppen	Beta	R-Squared	Standard Error	Observations	Lower 95 %	Upper 95 %
5 yr Monthly Observations	0,4018	0,0695	0,1913	60	0,0189	0,7846

Table 7: Results of raw Beta estimation

When plotted against the 5 year rolling beta in figure 16 the estimated current 5 year monthly beta might seem like a decent proxy for the true beta. However, we are not satisfied with this result as the estimation of AF Gruppens beta comes with a standard error of 0,1913 and puts the beta in a 95 % confidence interval between 0,0189 and 0,7846. To improve the precision of our beta estimation, we will calculate the industry beta as AF Gruppen and its peers face the similar operating risk. Arguable they should have somewhat similar operating betas (Koller, Goedhart, & Wessels, 2005, s. 318).

However, as companies have different capital structures we must do one important thing to get the most precise industry beta, namely strip the effects of leverage. The reason for this is that a company's beta is a function of not only its operating risk, but also the financial risk it faces. A more leveraged company is in most cases more risky, which is reflected in the company's beta.

To remove the effect of leverage (and tax shield), we will use the M&M theorem. They argued that the weighted average risk of a company's financial claims equals the weighted average risk of a company's economic assets. Using beta to represent risk, this relation is as follows:

$$\frac{V_u}{V_u + V_{txa}} \beta_u + \frac{V_{txa}}{V_u + V_{txa}} \beta_{txa} = \frac{D}{D + E} \beta_d + \frac{E}{D + E} \beta_e$$

*Operating assets*
*Tax assets*
*Debt*
*Equity*

By rearrange we can solve for the equity beta,  $\beta_e$ :

$$\beta_e = \beta_u + \frac{D}{E} (\beta_u - \beta_d) - \frac{V_{txa}}{E} (\beta_u - \beta_{txa})$$

However, because debt claims have first priority in case of bankruptcy, the beta of debt tends to be low. Thus, like many practitioners we consider the beta of debt to be 0, especially given AF Gruppen low leverage. Also, some companies tend to have a constant capital structure which allow us to set  $\beta_{txa} = \beta_u$ . The equity beta then becomes the following:

$$\beta_e = \beta_u \left(1 + \frac{D}{E}\right)$$

#### Equation 6: Equity Beta

Where a company's equity beta equals the company's operating beta, commonly known as the unlevered beta, times a leverage factor. Not surprisingly, as leverage rises, so will the company's equity beta. Using this relation, we are able to convert equity betas into unlevered betas. By assuming that AF Gruppen's peers have similar operating characteristics we can use the unlevered betas to construct an average industry beta.

We did this by regressing peer stock returns on company-specific relevant market indices, un-levering each one, finding the median and then re-levering the industry beta to AF Gruppen's target leverage. We then end up with an estimated beta of AF Gruppen of 0,75, a little below that used by some practitioners, which use the industry beta proposed by Aswath Damodaran of 0,96 (Damodaran, Stern, 2017). The reason why we didn't use this is because of AF Gruppen's lack of broad international presence, a necessary criterion in order to use this beta in our view since it was mostly calculated using American companies and simply because our own findings could not support it.

### 9.3 Estimating the Market Risk Premium

The market risk premium (MRP) is the difference between the market's expected return and the risk free rate, which represents an investor's required rate of return

to be in possession of the market portfolio. However, similar to the beta, the use of MRP in the CAPM suffers from several weaknesses, and has for a long time been a debated measurement. The debate concerns the ability of stocks to outperform bonds over the long run, which has implications for corporate valuation, portfolio composition and retirement savings. And like a stock's expected return, the expected return on the market is also unobservable (Koller, Goedhart, & Wessels, *Valuation: Measuring and Managing The Value of Companies*, 2005, s. 303). Unobservable factors in the market includes investors risk aversion, supply and quality provided in the market, macroeconomic risks, liquidity and behavioral aspects. Such unobservable conditions make the estimation of MRP to be fairly challenging. That being said, there are three commonly used methods to calculate the MRP, namely the historical market risk premium-method, market risk premium regressions and forward looking models.

An alternative to calculating the MRP ourselves is to use the one provided by PwC in their annual market risk premium survey. Based on a survey answered by 143 respondents from the Norwegian Society of Financial Analysts (Norske Finansanalytikeres Forening, NFF), the risk premium in the Norwegian market is 5 %. As we wish to concentrate our efforts elsewhere, we deem the 5 % risk premium a suitable choice for our case and proceed accordingly.

#### *9.4 Estimating the Cost of Equity*

To properly estimate the cost of equity we will employ the capital asset pricing model (CAPM):

$$E(R_i) = r_f + \beta_i [E(R_M) - r_f]$$

$E(R_i)$  = expected rate of return on security  $i$

$r_f$  = risk-free rate

$\beta_i$  = security  $i$ 's beta (measure of volatility or systematic risk)

$[E(R_M) - r_f]$  = the market risk premium

#### **Equation 7: Capital Asset Pricing Model**

The model is building on the early work of Markovitz' research on diversification and modern portfolio theory and was introduced by Treynor (1962), Lintner (1965) and Mossin (1966), independently. Its purpose is to describe the relationship between systematic risk and expected return of an asset. The CAPM is discussed at length in modern finance textbooks such as (R. Brealey, S. Myers, and F. Allen,

2014) and (T. Copeland, F. Weston, and Shastri, 2013) and we will only focus on its main ideas and implementation. The cost of equity is the most difficult component of WACC to estimate and no models to estimate the cost of equity have been universally accepted (Koller, Goedhart, & Wessels, 2005). Nevertheless, we will use the CAPM, one of two go-to models to calculate the cost of equity for AF Gruppen, representing the required return of the shareholders.

In the CAPM, the beta is the only variable that is not equal for all companies and the industry beta was earlier found to be 0,75. Due to the uncertainty regarding what is a correct risk free rate, as discussed in chapter 9.1, we will calculate two different cost of equity to be used in the discount rate (WACC) for both the terminal value and the forecasting period. For the shorter term we will use the 10-year government bond interest rate of 1,42 % and for the terminal value a normalized risk free rate of 3 %. The market risk premium was found to be 5 %. With this in mind, we are able to calculate the cost of equity:

$$\text{Cost of equity}_{Long\ term} = 3\% + 0,75 \times 5\% = 6,75\%$$

$$\text{Cost of equity}_{Short\ term} = 1,42\% + 0,75 \times 5\% = 5,17\%$$

#### 9.5 Estimating cost of debt

AF Gruppen has a very low amount of interest bearing debt, and net interest bearing debt (NIBD) is even negative. Meaning AF Gruppen have more cash and cash equivalents than interest bearing debt. In addition to this, AF Gruppen has not issued any bonds, does not disclaim its cost of debt anywhere and has not been credit rated by any investment bank or equivalent party. Aswath Damodaran have written a short article named “Estimating a synthetic rating and cost of debt”, presenting an alternative way to estimate the cost of debt (Damodaran, Stern, 2000). By calculating the interest coverage ratio, one can create a synthetic credit rating and then apply an associated spread to the risk free rate, and arrive at a relevant cost of debt. Correspondingly with the cost of equity, we will calculate cost of debt to be used both in the terminal value and forecasting period.

$$\text{Interest Coverage Ratio} = \frac{EBIT}{\text{Interest Expenses}} = \frac{1034}{21} = 49,23$$

Equation 8: Interest Coverage Ratio

According to Damodaran, a company needs an interest coverage ratio of at least 12,5 in order to be rated AAA, and with a ratio of 49,23 in 2016 we give AF Gruppen a rating of AAA and an associated spread of 0,75%. This is backed up by our analysis in chapter 6.4. Given how AF Gruppen's debt is bank loans, we operate under the assumption that they pay 10-year government bond interest rate + the spread on their long term debt for the short term and the normalized risk free rate + the spread in the long term. Under these assumptions, we end up with a pre-tax cost of debt for AF Gruppen at 2,17% and 3,75% respectively. Although this approach may seem simple or even rudimentary, the fact that AF Gruppen has such a low leverage make the WACC much more dependent on the cost of equity than cost of debt. To further support this, we will test our valuation's sensitivity towards the cost of equity- and debt later on in chapter 10.3.

### 9.6 Weighted Average Cost of Capital

$$WACC = \frac{Equity}{Debt + Equity} r_{equity} + \frac{Debt}{Debt + Equity} r_{debt} (1 - T_m)$$

Finally, the after-tax cost of debt and cost of equity should be weighted using target levels of debt to value and equity to value. For mature companies, the target capital structure is often approximated by the company's current debt-to-enterprise value ratio, using market values of interest bearing debt and equity measured by the current market capitalization of AF Gruppen. The corporate tax rate in Norway has been lowered to 24% in 2017 (KPMG, 2017).

$$WACC_{Long\ term} = 0,9924 \times 6,75\% + 0,0075 \times 3,75\%(1 - 24\%) = 6,72\%$$

$$WACC_{Short\ term} = 0,9924 \times 5,17\% + 0,0075 \times 2,17\%(1 - 24\%) = 5,14\%$$

## 10. Valuation of AF Gruppen

Now that we have calculated the cost of capital, analyzed the key value drivers and forecasted the income and expenses of AF Gruppen this section will combine these aspects and attempt to arrive at the equity value of AF Gruppen.

## 10.1 Valuation Model

There are numerous methods of valuation, and these are not mutually exclusive. In fact, in order to attain the most reliable estimate of the value of the equity, different methods should be combined (Damodaran, 2012). However, the choice of method is contingent on the company and its stage in the life cycle, availability and quality of information and the time available to the authors to thoroughly perform the analysis (Koller, Goedhart, & Wessels, 2015)

Listed companies at a mature stage in their life cycle are often characterized by stable cash flows and easy access to publicly available information such as annual reports. AF Gruppen is a listed company with stable cash flows and is required by law to present detailed annual reports with information about income statements, balance sheets and cash flows. Based on this criterion, we argue that a fundamental analysis method should be used to value the company. We do this by valuing the multibusiness company with discounted cash flow method (DCF) and will supplement this with comparable valuation using multiples. This comparable valuation will be done using framework presented by Koller et. al.

### *10.1.1 Discounted Cash Flow*

The discounted cash flow model is considered the most accurate and flexible method to value companies, according to Koller et. al. The DCF does not just look at earnings of the company, but examine how the company generates its growth by factoring in the capital spending and other cash flows required for AF Gruppen to generate earnings. They present two ways of using the model to arrive at the equity value; by estimating the equity value directly or by estimating the enterprise value (EV) and subtract net debt. We have decided to use the latter, as the enterprise method is the most appropriate method when valuing multibusiness companies. In addition, the equity method is difficult to implement in practice, due to the challenging way of matching equity cash flows with the correct cost of equity (Koller, Goedhart, & Wessels, 2015, s. 105). The steps necessary to employ a correct enterprise DCF valuation is to first project revenue growth and then return on invested capital. These two aspects are the essential key drivers needed to estimate the free cash flow to the firm (FCFF), which provides the basis for our enterprise DCF valuation (Koller, Goedhart, & Wessels, 2015, s. 111). Based on our projections (see appendix 9) we expect both revenues and ROIC of AF Gruppen



to grow further during our forecast period, making a rather optimistic view with regards to our valuation and estimation of the FCFF.

#### *10.1.2 Per-share value of the Equity of AF Gruppen – Discounted Cash Flow*

As stated, the estimation of the enterprise value depends on the FCFF according to equation 9 below, forecasted in chapter 7:

$$FCFF_t = NOPAT_t + Depreciation_t \pm \Delta Working Capital_t \pm CAPEX_t$$

#### **Equation 9: Free Cash Flow to Firm**

In order to calculate the implied enterprise value of AF Gruppen we used equation 10, illustrated below. The first part is the discounting of future free cash flows over the chosen five-year forecast period, using AF Gruppen's period-relevant WACC as the discount-factor. Furthermore, we need to add the last part of the formula, which is the estimation of AF Gruppen's free cash flow beyond our forecast period. This is the computation of the terminal value (TV). The TV represents all future cash flows, and thereby reflect returns that will occur farther into the future. A widely-used method to calculate the TV of cash flows is by employing the Gordon Growth Model.

Our last year of the forecasting period we estimated the FCFF of AF Gruppen to be NOK 728 million. By discounting the FCFF year five with our previously used WACC, and further assume that AF Gruppen's cash flow will grow with 3 % in perpetuity we ended up with a terminal value of NOK 20 154 million. By adding the two parts leading to the implied enterprise value of NOK 17 446 million.

$$EV_0 = \sum_{t=1}^n \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{WACC-g} \times \frac{1}{(1+WACC)^n}$$

#### **Equation 10: Enterprise Value**

To this value we added cash and cash equivalents, equity investments and subtracted total debt as well as noncontrolling interest (also known as net interest bearing debt) in order to find the implied equity value of AF Gruppen, equaling NOK 17 921 million.

$$E_0 = EV_0 - NIBD_0$$

#### **Equation 11: Value of Equity**

By dividing the equity value by the number of shares outstanding (93,61 million) leads to an estimated share price of NOK 191, which is an implied discount of 25 % to the stock's closing price on April 21<sup>th</sup> 2017.

Due to the fact that AF Gruppen don't disclaim segment-specific costs and other similar details, a sum-of-the-parts valuation of AF Gruppen was not possible to perform. However, we feel confident that our valuation is accurate and that our derived value of AF Gruppen is a good representation of its intrinsic value. The derivation of FCFF and the present value of the FCFF's can be found in appendix 9.

## 10.2 Comparable Valuation – Multiples

Comparable valuation aim to value a company by using comparable multiples obtained from similar companies in similar industries. According to a framework presented by Stephen Penman (2013), comparable multiple valuations are done through 3 steps:

1. Identify comparable companies in similar industries
2. Identify multiples that represent appropriate characteristics such as EV/EBITDA, EV/Sales etc.
3. Deploy obtained data to estimate the equity value of the company in question

This method is easy to use and is often practiced to create ballpark numbers and valuations (Penman, 2013). It is however, less accurate due to the fact that a lot of assumptions and information is compressed into a single number and is very susceptible to underlying differences in the companies in question. Thus, we aim to use this model only to supplement our DCF-valuation.

Appendix 14 provide the reader with the multiples discussed above. Enterprise value is the theoretical takeover value, which corresponds to how an analyst, investment banker or acquirer would value a company. EV/Revenue is a financial ratio that seek to compare the total enterprise value of AF Gruppen and its peers to its revenues, while the EV/EBITDA is the enterprise value to Earnings before interest, taxes, depreciation and amortization. These multiples compare the actual price you would have to pay for a company with the money the company can

generate. The enterprise value is derived by taking the market capitalization, adding total debt, preferred stock and minority interests less cash and cash equivalents. EBITDA is known as a proxy for operating cash flow, which also might be the most popular EV-multiple denominator. The reason for this is that EBITDA solely focusing on revenue and costs that must be considered running the business. Additionally, it is unaffected by depreciation policy and appears unaffected by differences in capital structure as we have excluded interest. In contrast to the EV/Revenue, this ratio looks at how profitable one company is, which is far more interesting when considering whether a company is overvalued or undervalued. As AF Gruppen's EV/Revenue were significantly higher than their peers, the EV/EBITDA tells another story. Due to our calculations, AF Gruppen's EV/EBITDA is 11.8x while the average EV/EBITDA is 11.2x. As AF Gruppen's EV/Revenue were significantly higher than their peers, the EV/EBITDA tells another story. Due to our calculations, AF Gruppen's EV/EBITDA is 11.8x while the average EV/EBITDA is 11.2x. By multiplying the EBITDA for 2016 with the average EV/EBITDA multiple leads to an implied equity value of NOK 14 billion, which further equals an implied share price of 149,6. However, as stated, this valuation method only reflects a simplified situation of the company, such as neglecting growth potential and other important market conditions for AF Gruppens growth in the future which we have included in our DCF, we therefore believe that the share price is in the upper bound of NOK 149,6 and 191 per share.

### 10.3 Sensitivity Analysis

The discounted cash flow model is highly susceptible to underlying assumptions and calculations such as discount factor parameters and future growth-rates. To test our valuation's sensitivity towards these parameters we have created matrices to illustrate the change in our implied per-share-equity-value based on changes in the underlying metrics. We first chose to test the sensitivity towards the long term-WACC and free cash flow growth used in the terminal value and secondly against the long term cost of equity and cost of debt.

Sensitivity - Implied Share Price from DCF Analysis - Long-Term FCF Growth Rate and Long Term Discount Rate (WACC):										
	Discount Rate (WACC):	Terminal FCF Growth Rate:								
		1,00%	1,50%	2,00%	2,50%	3,00%	3,50%	4,00%	4,50%	5,00%
4,72%		205	232	269	323	407	562	930	2971	-
5,22%		182	202	228	264	317	400	551	912	2915
5,72%		163	178	198	224	260	311	393	541	896
6,22%		148	160	175	195	220	255	306	386	531
6,72%		135	145	157	172	191	217	251	300	379
7,22%		125	133	143	155	169	188	213	246	295
7,72%		116	123	131	140	152	167	185	209	242
8,22%		108	114	121	129	138	150	164	182	206
8,72%		101	106	112	119	127	136	147	161	179

Source: Authors' Compilation

Figure 15: Sensitivity Towards Long-Term FCF Growth rate and Long Term Discount Rate

Above, we model implied share price based on  $\pm 0,5 \%$  changes in terminal FCF Growth Rate and long term WACC used in our original DCF valuation. When interpreting the results it becomes clear that the model is slightly more susceptible to changes in the discount rate than its long-term FCF growth rate. There is however, more uncertainty related to the long term growth rate than the discount rate, which is important to be aware of due to the fact that it is a variable that is more difficult to calculate and more likely to deviate from our chosen 3 %.

The second matrix, figure 18 illustrates changes in the long term- cost of debt and equity used in the calculation of the long term discount rate (WACC). As suspected in chapter 9.5, our implied share price is not surprisingly much more vulnerable to changes in the cost of equity than the cost of debt, due to the almost miniscule amount of debt relative to equity.

Sensitivity of Implied Share Price from DCF Analysis - Long Term Cost of Debt and Cost of Equity										
	Cost of Equity	Cost of Debt								
		1,75%	2,25%	2,75%	3,25%	3,75%	4,25%	4,75%	5,25%	5,75%
4,75%		405	405	404	403	403	402	401	401	400
5,25%		316	316	315	315	315	314	314	314	313
5,75%		260	259	259	259	259	258	258	258	258
6,25%		221	220	220	220	220	220	219	219	219
6,75%		192	192	192	191	191	191	191	191	191
7,25%		170	170	170	170	169	169	169	169	169
7,75%		153	152	152	152	152	152	152	152	152
8,25%		139	138	138	138	138	138	138	138	138
8,75%		127	127	127	127	127	127	127	127	127

Source: Authors' Compilation

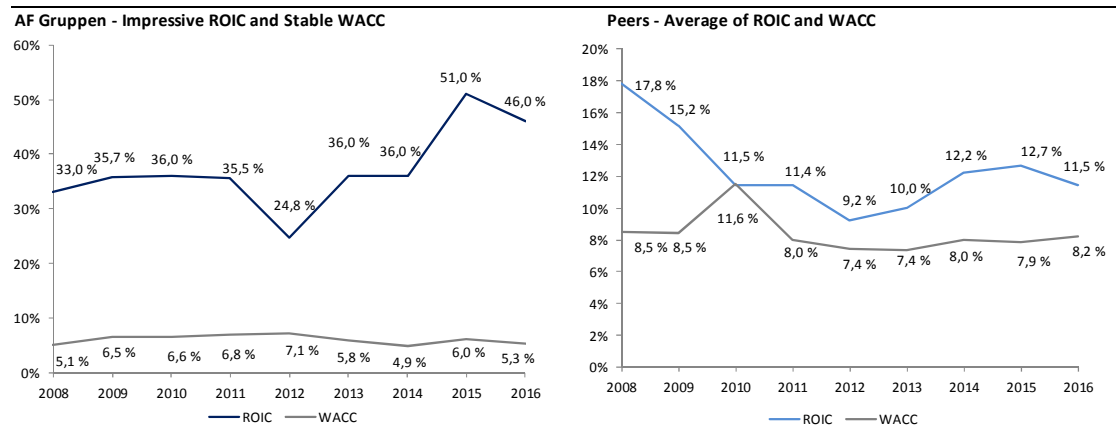
Figure 16: Sensitivity towards Long-Term FCF Growth rate and Long Term Discount Rate

See appendix 12 and 13 for the scenario analyses presented in relative terms instead of absolutes.

## 11. The width- and value of the Economic Moat

In chapter 2.1.6 we shortly mentioned what to look for when attempting to pinpoint an economic moat and the most important metric was the ROIC and its relation to the company's cost of capital. Based on this, and to further strengthen our cause

when investigating AF Gruppen’s moat, we took a deeper look into the ROIC and cost of capital of AF Gruppen and its peers.



Source: Bloomberg, Authors' Calculations

Figure 17: AF Gruppen and Peers - ROIC and WACC

Based on graphical inspection of the graphs below, we immediately see that AF Gruppen’s ROIC is considerably larger than its WACC. In addition to this, we see that peer-group ROIC more closely track peer-group WACC. In order to further back up our preliminary inspections, we wish to test whether or not the gap between AF Gruppen’s ROIC and WACC is statistically significantly larger than that of peers. We do this by using a simple t-test, where the t-statistic is defined as:

$$t = \frac{[(x_1 - x_2)]}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

**Equation 12: t-statistic**

$x_1$  = average of ROIC – WACC of AF Gruppen,  $x_2$  = average of ROIC – WACC of Peers

$s_1^2$  = variance of observations of AF Gruppen,  $s_2^2$  = variance of observations of Peers

$n_1$  = number of observations of AF Gruppen,  $n_2$  = number of observations of Peers

Our hypotheses are:

$H_0: x_1 = x_2$

$H_a: x_1 > x_2$

The input-data is found tabulated below.

AF Gruppen and Peers - ROIC minus WACC									
	2008	2009	2010	2011	2012	2013	2014	2015	2016
NCC	12,56 %	8,30 %	-0,40 %	2,68 %	6,16 %	4,68 %	4,44 %	6,31 %	1,49 %
PEAB	-	1,61 %	-3,84 %	1,31 %	-0,91 %	-3,85 %	1,78 %	2,78 %	3,37 %
SKANSKA	2,26 %	9,66 %	0,47 %	3,38 %	0,83 %	4,15 %	3,08 %	4,06 %	3,24 %
Veidekke	13,09 %	7,31 %	3,39 %	6,42 %	1,26 %	5,49 %	7,60 %	6,10 %	4,98 %
<b>AF Gruppen</b>	<b>27,92 %</b>	<b>29,17 %</b>	<b>29,43 %</b>	<b>28,67 %</b>	<b>17,67 %</b>	<b>30,20 %</b>	<b>31,12 %</b>	<b>45,01 %</b>	<b>40,70 %</b>
Average of Peers	9,30 %	6,72 %	-0,10 %	3,45 %	1,84 %	2,62 %	4,23 %	4,81 %	3,27 %
	AF Gruppen	Peers							
Average	31,10 %	4,02 %							
Variance	0,0061	0,0008							

Source: Bloomberg, AF Gruppen, Authors' Calculations

Table 8: Data for t-test.

This gives a t-statistic of:

$$t = \frac{[(31,1\% - 4,02\%)]}{\sqrt{\frac{0,0061}{9} + \frac{0,0008}{9}}} = 9,80$$

This is significant at a 99 % level, and we can reject the null hypothesis. This confirms our belief that AF Gruppen has a significantly larger gap between its ROIC and WACC than peers. Note that the number of observations is a little scarce in order to rely on our results a 100 %, but in our view, it is safe to say that the relationship between AF Gruppen's ROIC and WACC is much better than peers.

Based on our findings here, we move on to further investigate the economic moat.

### 11.1 What is the moat?

In our financial analysis we noticed that AF Gruppen operate with better margins than their competitors, which is impressive due to the fact that most of AF Gruppen's revenues stem from the same segment as its competitors. So what might cause this? During the last couple of years, AF Gruppen has experienced fantastic financial performance, won large contracts and is now well positioned for further growth. At the same time, they have built themselves a reputation as a company that is able to deliver high returns on operations and to shareholders and is now a well reputable company in the industry.

Rindova et al. published the paper "Reputation as an Intangible Asset: Reflections on Theory and Methods in Two Empirical Studies of Business School Reputations" in 2010. Here they mention that the topic of organizational reputation has attracted considerable attention among management scholars over the past 20 years. Much of this work is informed by an intuition that reputation-broadly defined as stakeholder perceptions with regard to an organization's ability to deliver valued

outcomes (Rindova & Fombrun, 1999)-provides the firm with an intangible asset that affects subsequent performance (Barney, 1991;Dierickx & Cool, 1989)

Specifically, they emphasize that reputation is a sociocognitive construct that is distinct from the objective internal and external resources invested to develop it and that reputation is characterized by two dimensions—quality and prominence—that together determine its value as an intangible asset contributing to firm competitive advantage. (Rindova et al., 2010).

AF Gruppen themselves say that their reputation is very important, for example they mention in their 2016 annual report that they “always have cash at hand to handle financial obligations when due, in order to avoid damage of reputation”. In addition to this, CEO Morten Grongstad says that their employees is one of their greatest competitive advantages.

According to Sabrina Helm in the article “The Role of Corporate Reputation in Determining Investor Satisfaction and Loyalty”, from a firm’s point of view – a good reputation allows it to charge premium prices, attract better applicants for its workforce, attract investors, and lower its cost of capital, making it one of the firm’s most important intangible assets. Larsen (2002) goes so far as to claim that companies manage their reputations mainly for financial reasons (Helm, 2007).

Sabrina claims there is evidence that current or potential investors perceive a company with a good reputation to be less risky than companies with equivalent financial performance, but a less well-established reputation. In spite of equivalent risk and return prospects, highly reputed firms profit from investors who are willing to pay more for their shares than for shares of less reputed firms (Helm, 2007).

Based on what we can observe, with high margins, high returns to shareholders, institutional and government shareholders such as Folketrygdfondet and OBOS (Bloomberg), a low cost of capital etc. we can draw a conclusion that AF Gruppen benefits from a good reputation, which in turn is an intangible asset. Recall from chapter 2.1 that intangible assets are cause of an economic moat; “Intangible assets are things such as patents or government licenses that explicitly keep competitors at bay”. In this case, the fact that AF Gruppen experience a high reputation might be the cause of higher margins through good prices from subcontractors, long term, patient investors through a long-term perspective on doing business, skilled

employees through a common perception of AF Gruppen being a good place to work. The fact that participators in AF Gruppen's employee share purchase program have seen great returns the last couple of years, might have contributed to the latter and the list goes on.

To sum things up, we find it difficult to pinpoint *one* specific thing comprising AF Gruppen's moat. We do however, believe they possess a wide moat, that will continue to help AF Gruppen deliver good returns during the next couple of years. We are confident that this moat consists of a number of benefits stemming from their intangible assets (reputation), and ability to grow both organically and through acquisitions. This is reflected in our implied share price of NOK 191, a premium of 25 % compared to today's market cap.

We will now move on to value the economic moat.

## 11.2 Valuation of Economic Moat - Economic Value Added

This thesis started off with the introduction of our problem statements and the concept of economic moats. Throughout the paper we have introduced the necessary theories and concepts in order to properly fathom what economic moats are all about. In addition to this we have been able to confirm the fact that AF Gruppen ticks every box in order to qualify for an economic moat; their intangible assets – i.e. strong reputation provide them with a wide moat that have enabled them to deliver high returns on invested capital year-after-year. We will now answer the final part of our last problem statement: "...what is the value of its moat"?

In chapter 2. we mentioned that there does not exist one universally accepted model to value economic moats. However, EVA was presented as a possible way to measure or calculate the value and in chapter 3.3. we introduced the concept of the metric. We also know that a company that earns its cost of capital does not create additional value and that according to theory, during the span of its life, company's ROIC should converge towards its cost of capital. The exception of this "rule" is of course the companies in possession of a wide moat.

Recall from chapter 3.3, EVA was expressed as:

$$\text{Economic Value Added} = \text{Invested Capital} \times (\text{ROIC} - \text{WACC})$$



This metric can be used in the EVA model, to help calculate the enterprise value of companies. The value is found accordingly (Koller, Goedhart, & Wessels, 2005)

$$\text{Enterprise Value} = \text{Invested Capital}_0 + \sum_{t=1}^n \frac{EVA_t}{(1 + WACC)^t} + \frac{EVA_{n+1}}{(1 + WACC)^n \cdot (WACC - g)}$$

**Equation 13: Economic Value Added Enterprise Model**

With the assumption that all excess returns are caused by the company's reputation, then AF Gruppen without their good reputation/economic moat would earn a return equal to its cost of capital. The value of AF Gruppen without a return on invested capital above its cost of capital would then equal the invested capital today, because EVA in the future would be zero. However, because this is not the case this model allows us to isolate the present value of future expected economic value added, hence giving us a value on AF Gruppen's economic moat, assuming all excess returns are caused by the effects its good reputation. Although this assumption is might seem unrealistic, and our strategic analysis revealed the potential of the industry going forward, the fact that peers have not been able to keep its ROIC at the same level as AF Gruppen (see figure 19) tells us that we are not far off when continuing under this assumption.

Based on this, we find that the enterprise value of AF Gruppen when using equation 14 is NOK 17 446 million. This result should, and do provide us with the same EV as with our DCF. By isolating the PV of all EVA created in the future we end up with a value of NOK NOK 15 874 million. This means that 91 % of our implied enterprise value stem from the fact that AF Gruppen generate returns over its cost of capital. If this had not been the case, and returns equaled cost of capital, our implied enterprise value would be much lower.

## 12. Conclusion

The main goal of this paper was to highlight and elaborate on the subject of economic moats and attempt to contribute to the literature by performing a case study on a company that seemingly benefits from the possession of one.

We started out by introducing all necessary frameworks and theories needed to properly fathom why the concept of value creation is important in order to pinpoint, understand and value an economic moat. During this process, we emphasized the importance of ROIC, WACC and economic value added and explained how this is an effective way to measure whether or not a company possess a lasting competitive advantage.

After the introduction of the fundamental principles of value creation we continued with the task of performing a case study on AF Gruppen. In order to fully draw on the concept of economic moats in a case study, we chose to perform a fully-fledged valuation of AF Gruppen and then attempt to pinpoint and value its suspected economic moat. We found this to be the right move, because one needs to understand all aspects of a company, both financial and strategic, in order to properly answer our problem statements.

In the strategical analysis we found that AF Gruppen operates in a highly competitive industry with decent future outlooks, and in the financial analysis we found that AF Gruppen's margins are surprisingly better than that of peers. We then applied our findings to our forecasts and cost of capital calculations and proceeded with valuing the company.

We modelled the company's cash flows, applied the relevant cost of capital and found an implied per-share equity value of NOK 191 as of April 21th 2017, a 25 % premium compared to the market capitalization at that date. When moving on, we felt confident that AF Gruppen possess an economic moat, and found this is mostly thanks to its intangible assets in the form of a good reputation and all the associated benefits. We then valued the economic moat, and under the assumptions presented, we found that 91 % of our implied enterprise value of AF Gruppen is due to the moat and the company's resulting ability to create excess returns over its cost of capital.

Although the calculation of our implied value of AF Gruppen's economic moat might seem arbitrary, we believe it to be correct under the assumptions presented throughout this paper, and that our work can be used for further research on the matter. We encourage future research to concentrate on further developing the economic value added framework, so that it needs not depend so much on an uncertain future. We also believe additional empirical research should look even further into the performance of companies with economic moats; whether or not they actually outperform the market, as the research on this matter is limited.

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## Appendices

### Appendix 1. List of Abbreviations and Glossary

<i>Valuation and Finance</i>		<i>Statistics</i>	
<b>ATO</b>	Asset turnover	<b><math>\alpha</math></b>	Regression Intercept
<b>Beta</b>	Measure volatility of an asset compared to market.	<b><math>\epsilon</math></b>	Error Term
<b>CapEx</b>	Capital Expenditures	<i>Strategic</i>	
<b>CAPM</b>	Capital Asset Pricing Model	<b>GDP</b>	Gross Domestic Product
<b>DCF</b>	Discounted Cash Flow	<b>PESTEL</b>	Political, Economic, Social, Technological, Environmental and Legal
<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation and Amortization	<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>EV</b>	Enterprise Value	<b>VRIO</b>	Valuable, Rare, Imitable, Organization
<b>EVA</b>	Economic Value Added		
<b>FCFF</b>	Free Cash Flow to the Firm		
<b>MRP</b>	Market Risk Premium		
<b>NIBD</b>	Net Interest Bearing Debt		
<b>NOK</b>	Norwegian Krone		
<b>NOPLAT</b>	Net Operating Profit Less after Tax		
<b>NPV</b>	Net Present Value		
<b>ROE</b>	Return on Equity		
<b>ROIC</b>	Return on Invested Capital		
<b>WACC</b>	Weighted Average Cost of Capital		



## Appendix 1. Operating Model: Key Assumptions

Operating Model: Key Assumptions			
Company Name:	AF Gruppen	Valuation Date:	31/12/2016
Ticker:	AFG	Share Price:	kr 154
Tax Rate:	24 %	Discount Employee:	20 %
Target Price:	kr 191	Shares Outstanding:	93,61
Recommendation:	Buy		

## Appendix 2. Sensitivity Toggles for Key Assumptions

Sensitivity Toggles for Key Assumptions	
Building Backlog Growth	2 %
Civil Engineering Backlog Assumptions	2 %

## Appendix 3. Revenue Assumptions

Revenue Assumptions	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
<i>Building Assumptions:</i>										
Building Revenue	millions	4 793	5 172	6 678	6 688	8 048	8 499	9 475	10 744	11 124
Backlog Conversion	%	81 %	125 %	112 %	79 %	90%	90%	95%	102%	100%
Order backlog	millions	5 947	4 138	5 947	8 467	8 942	9 444	9 973	10 533	11 124
Baseline Backlog Growth	%	N/A	-30 %	44 %	42 %	6%	6%	6%	6%	6%
Backlog Growth Toggle	%					6 %	6 %	6 %	6 %	6 %
% Total revenues	%	47 %	52 %	54 %	57 %	53 %	53 %	53 %	53 %	53 %
<i>Civil Engineering Assumptions:</i>										
Civil Engineering Revenue	millions	2 950	3 172	3 760	3 368	5 415	5 829	6 624	7 656	8 080
Backlog Conversion	%	64 %	109 %	111 %	60 %	90%	90%	95%	102%	100%
Order backlog	millions	4 604	2 913	3 402	5 589	6 017	6 477	6 972	7 506	8 080
Baseline Backlog Growth	%	N/A	-37 %	17 %	64 %	8%	8%	8%	8%	8%
Backlog Growth Toggle	%					8 %	8 %	8 %	8 %	8 %
% Total revenues	%	29 %	32 %	30 %	29 %	36 %	36 %	37 %	38 %	38 %
<i>Other Revenue Assumptions:</i>										
Other Revenue	millions	2384	1591	1960	1719	1 736	1 754	1 771	1 789	1 807
Other Revenue Growth	millions	N/A	-33 %	23 %	-12 %	1%	1%	1%	1%	1%
Environment	millions	684	709	687	729	-	-	-	-	-
Offshore	millions	1480	850	1186	1014	-	-	-	-	-
Property	millions	60	21	25	48	-	-	-	-	-
Energy	millions	173	141	225	177	-	-	-	-	-
Other	millions	13	130	163	249	-	-	-	-	-
% Total revenues	%	24 %	16 %	16 %	15 %	11 %	11 %	10 %	9 %	9 %
<b>Total Revenue</b>	<b>millions</b>	<b>10 127</b>	<b>9 935</b>	<b>12 398</b>	<b>11 775</b>	<b>15 199</b>	<b>16 082</b>	<b>17 870</b>	<b>20 188</b>	<b>21 010</b>

## Appendix 4. Expense Assumptions

Expense Assumptions	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
Subcontractors % Revenue	%	46 %	45 %	50 %	44 %	46%	46%	46%	46%	46%
Cost of materials % Revenue	%	13 %	15 %	14 %	15 %	14%	14%	14%	14%	14%
Other OPEX % Revenue	%	14 %	11 %	8 %	9 %	9%	9%	8%	8%	7%
Net gains/(losses)	millions	47	126	135	18	-	-	-	-	-
Profit loss from joint ventures	millions	40	10	31	4	-	-	-	-	-
Employees	People	2 708	2 797	3 030	3 049	3 354	3 723	4 170	4 712	5 324
Employees Growth	%		3,3 %	8,3 %	0,6 %	10,0%	11,0%	12,0%	13,0%	13,0%
Average Salary per Employee	millions	0,79	0,80	0,84	0,87	0,88	0,90	0,91	0,92	0,94
Average Salary Growth	%		1,6 %	4,6 %	3,9 %	1,5%	1,5%	1,5%	1,5%	1,5%
Payroll Costs	millions	2 132	2 238	2 535	2 650	2 959	3 333	3 789	4 346	4 985
Depreciation % Revenue	%	1,05 %	1,15 %	0,99 %	1,15 %	1,08%	1,08%	1,08%	1,08%	1,08%
Amortization % Revenue	%	0,04 %	0,03 %	0,15 %	0,36 %	0,14%	0,14%	0,14%	0,14%	0,14%
Net financial items	millions	12	10	6	6	7	8	9	10	12
Attributable to NCI	%	5 %	8 %	10 %	12 %	12%	12%	12%	12%	12%

Appendix 5. Balance Sheet- and Cash Flow Statement Drivers

Balance Sheet- and Cash Flow Statement Drivers	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
Inventories % Cost of Sales:	%	4 %	4 %	3 %	3 %	3%	3%	3%	3%	3%
Accounts Receivable % Revenue:	%	21 %	21 %	13 %	18 %	18%	18%	18%	18%	18%
Other Current Assets % OpEx:	%	0,92 %	0,74 %	0,62 %	0,41 %	0,7%	0,7%	0,7%	0,7%	0,7%
Other non-current FA % OpEx:	%	0,74 %	0,91 %	1,57 %	1,96 %	1,3%	1,3%	1,3%	1,3%	1,3%
CapEx % Revenue	%	1,48 %	1,13 %	1,02 %	1,21 %	1,70%	1,60%	1,50%	1,40%	1,30%
Depreciation % Revenue	%	1,05 %	1,15 %	0,99 %	1,15 %	1,08%	1,08%	1,08%	1,08%	1,08%
Amortization % Revenue	%	0,04 %	0,03 %	0,15 %	0,36 %	0,14%	0,14%	0,14%	0,14%	0,14%
Share based compensation % Revenue	%	0,12 %	0,09 %	0,04 %	0,06 %	0,08%	0,08%	0,08%	0,08%	0,08%
Net Gains / Losses										
Deferred Income Taxes % Income Taxes:	%/millions	295 %	129 %	132 %	85 %	4	3	2	1	0
Other Non-current Liabilities % OpEx	%	0,04 %	1,44 %	1,44 %	1,01 %	0,98%	0,98%	0,98%	0,98%	0,98%
Interest Bearing Loans % Revenue	%	0,78 %	3,17 %	0,85 %	0,96 %	1,44%	1,44%	1,44%	1,44%	1,44%
Accounts Payable % Revenue	%	29,80 %	27,61 %	26,10 %	28,61 %	28,03%	28,03%	28,03%	28,03%	28,03%
Provisions % Revenue	%	1,76 %	1,67 %	2,81 %	3,10 %	2%	2%	2%	2%	2%
Current tax payable	millions	200	322	178	377	377	377	377	377	377
Other Non-Cash Charges % Revenue:	%	-1,3 %	-3,4 %	-4,3 %	-1,5 %	(2,62%)	(2,62%)	(2,62%)	(2,62%)	(2,62%)
Other IA % Revenue	%	1,14 %	1,50 %	1,23 %	1,21 %	0,50%	0,50%	0,50%	0,50%	0,50%
Dividends % NI	%	84,96 %	109,52 %	94,47 %	94,54 %	80,00%	80,00%	80,00%	80,00%	80,00%
Share Issuance	millions	53	279	72	120	123	123	123	123	123
Share Repurchase	millions	-3	2	3	-8	2	3	-	-	-
Other Financing Activities % Total Assets	%	-0,77 %	-0,60 %	-2,63 %	-2,12 %	(1,53%)	(1,53%)	(1,53%)	(1,53%)	(1,53%)

Appendix 6. Reformulated Income Statement

Income Statement:	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
Building	millions	4 793	5 172	6 678	6 688	8 048	8 499	9 475	10 744	11 124
Civil Engineering	millions	2 950	3 172	3 760	3 368	5 415	5 829	6 624	7 656	8 080
Other Revenue	millions	2 384	1 591	1 960	1 719	1 736	1 754	1 771	1 789	1 807
<b>Total Revenue</b>	<b>millions</b>	<b>10 127</b>	<b>9 935</b>	<b>12 398</b>	<b>11 775</b>	<b>15 199</b>	<b>16 082</b>	<b>17 870</b>	<b>20 188</b>	<b>21 010</b>
Subcontractors	millions	4 637	4 498	6 145	5 168	7 011	7 418	8 243	9 313	9 692
Cost of materials	millions	1 366	1 468	1 765	1 778	2 189	2 316	2 573	2 907	3 026
Payroll Costs	millions	2 132	2 238	2 535	2 650	2 959	3 333	3 789	4 346	4 985
Other OPEX	millions	1 400	1 116	968	1 084	1 368	1 447	1 430	1 615	1 471
Net gains/(losses)	millions	47	126	135	18	-	-	-	-	-
Profit loss from joint ventures	millions	40	10	31	4	-	-	-	-	-
Depreciation	millions	106	114	123	135	165	174	194	219	228
Amortization	millions	4	3	18	42	22	23	26	29	30
<b>Total OPEX</b>	<b>millions</b>	<b>9 559</b>	<b>9 900</b>	<b>11 388</b>	<b>10 843</b>	<b>13 713</b>	<b>14 712</b>	<b>16 254</b>	<b>18 429</b>	<b>19 431</b>
<b>Operating Income (EBIT)</b>	<b>millions</b>	<b>568</b>	<b>635</b>	<b>1 010</b>	<b>1 034</b>	<b>1 486</b>	<b>1 370</b>	<b>1 615</b>	<b>1 760</b>	<b>1 580</b>
ebit margin	%	5,6 %	6,4 %	8,1 %	8,8 %	9,8 %	8,5 %	9,0 %	8,7 %	7,5 %
Net financial items	millions	12	-10	-6	6	7,00	8,00	9,00	10,00	12,00
<b>Earnings before tax (EBT)</b>	<b>millions</b>	<b>580</b>	<b>625</b>	<b>1 004</b>	<b>1 040</b>	<b>1 493</b>	<b>1 378</b>	<b>1 624</b>	<b>1 770</b>	<b>1 592</b>
Income tax expense	millions	128	142	226	253	358	331	390	425	382
<b>Net income</b>	<b>millions</b>	<b>452</b>	<b>483</b>	<b>778</b>	<b>787</b>	<b>1 135</b>	<b>1 047</b>	<b>1 234</b>	<b>1 345</b>	<b>1 210</b>
NCI	millions	24	41	81	96	136	126	148	161	145
Shareholders in parent company	millions	428	442	697	691	999	921	1 086	1 183	1 064
<b>EBITDA</b>	<b>millions</b>	<b>678</b>	<b>752</b>	<b>1 151</b>	<b>1 211</b>	<b>1 672</b>	<b>1 567</b>	<b>1 834</b>	<b>2 007</b>	<b>1 837</b>
effective tax	%	22 %	23 %	23 %	24 %	24 %	24 %	24 %	24 %	24 %

Appendix 7. Reformulated Balance Sheet

Balance Sheet:	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>ASSETS:</b>										
Cash and cash equivalents		694	91	460	469	428	347	361	406	283
Inventory and projects for own account		229	232	219	186	302	320	356	402	418
Accounts receivable		2 093	2 129	1 599	2 061	2 755	2 915	3 239	3 659	3 808
Other current assets		88	69	71	44	92	99	109	124	131
<b>Total Current Assets</b>		<b>3 104</b>	<b>2 521</b>	<b>2 349</b>	<b>2 760</b>	<b>3 577</b>	<b>3 681</b>	<b>4 065</b>	<b>4 591</b>	<b>4 639</b>
PP&E		397	992	1 111	1 105	1 123	1 125	1 111	1 074	1 014
Intangible Assets		1 347	1 358	2 077	2 032	2 010	1 987	1 962	1 933	1 903
Investments in JV		272	406	433	389	389	389	389	389	389
Other non-current FA		71	85	179	212	178	191	211	239	252
<b>Total Non-current Assets</b>		<b>2 087</b>	<b>2 841</b>	<b>3 800</b>	<b>3 738</b>	<b>3 700</b>	<b>3 692</b>	<b>3 672</b>	<b>3 634</b>	<b>3 558</b>
<b>Total Assets:</b>		<b>5 191</b>	<b>5 362</b>	<b>6 149</b>	<b>6 498</b>	<b>7 277</b>	<b>7 373</b>	<b>7 737</b>	<b>8 225</b>	<b>8 197</b>
<b>Current Liabilities, Excluding Debt:</b>										
Accounts Payables		3 018	2 743	3 236	3 369	4 260	4 508	5 009	5 659	5 889
Provisions		178	166	348	365	304	322	357	404	420
Current tax payable		200	322	178	377	377	377	377	377	377
<b>Total Current Liabilities</b>		<b>3 396</b>	<b>3 231</b>	<b>3 762</b>	<b>4 111</b>	<b>4 941</b>	<b>5 207</b>	<b>5 743</b>	<b>6 440</b>	<b>6 687</b>
IBD (Current + Non-current)		79	315	105	113	113	113	113	113	113
Net Deferred Tax		377	183	298	214	218	221	224	224	224
Other non-current liabilities		4	134	164	110	197	212	234	265	280
<b>Total Non-Current Liabilities</b>		<b>460</b>	<b>632</b>	<b>567</b>	<b>437</b>	<b>528</b>	<b>546</b>	<b>570</b>	<b>602</b>	<b>617</b>
<b>Total Liabilities</b>		<b>3 856</b>	<b>3 863</b>	<b>4 329</b>	<b>4 548</b>	<b>5 470</b>	<b>5 752</b>	<b>6 313</b>	<b>7 042</b>	<b>7 303</b>
Equity to AF		1 229	1 362	1 561	1 680	1 642	1 563	1 479	1 359	1 190
Minority		106	137	259	270	165	58	55	175	296
<b>Total Equity</b>		<b>1 335</b>	<b>1 499</b>	<b>1 820</b>	<b>1 950</b>	<b>1 807</b>	<b>1 621</b>	<b>1 424</b>	<b>1 184</b>	<b>894</b>
<b>E+L</b>		<b>5 191</b>	<b>5 362</b>	<b>6 149</b>	<b>6 498</b>	<b>7 277</b>	<b>7 373</b>	<b>7 737</b>	<b>8 225</b>	<b>8 197</b>

## Appendix 8. Reformulated Cash Flow Statement

Cash Flow Statement:	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>CASH FLOWS FROM OA:</b>										
Income		580	625	1 004	1 040	1 135	1 047	1 234	1 345	1 210
Depreciation and write-downs		106	114	123	135	165	174	194	219	228
Amortization		4	3	18	42	22	23	26	29	30
Share Based Compensation		12	9	5	7	12	12	14	16	16
Deferred tax assets		-12	10	6	-6	4	3	2	1	0
Other Non-Cash Charges:		-127	-338	-529	-181	397	421	467	528	549
<b>Changes in Operating Assets and Liabilities:</b>										
Change Inventory		62	-3	40	27	116	18	36	46	16
Change Non-interest bearing receivables		260	-42	867	-431	694	160	324	420	149
Change Accounts payables and non-ibd		130	-292	-118	188	830	265	537	696	247
Change in other net assets		-	-	-	-	73	5	8	12	5
<b>Cash flow from operations:</b>		<b>1 015</b>	<b>86</b>	<b>1 416</b>	<b>821</b>	<b>1 033</b>	<b>921</b>	<b>1 171</b>	<b>1 299</b>	<b>1 010</b>
<b>CASH FLOWS FROM IA:</b>										
Sales / (Purchases) of short term investments		-73	-286	47	-12	-	-	-	-	-
CapEx		-150	-112	-126	-143	258	257	268	283	273
Other IA		115	149	152	143	75,99	80,41	89,35	100,94	105,05
<b>Cash flow from investing activities</b>		<b>-108</b>	<b>-249</b>	<b>73</b>	<b>-12</b>	<b>182</b>	<b>177</b>	<b>179</b>	<b>182</b>	<b>168</b>
<b>CASH FLOWS FROM FA:</b>										
Debt issuance		0	0	2	7	-	-	-	-	-
Debt Repayments		-162	-160	-300	-43	-	-	-	-	-
Other Financing Activities		-40	-32	-162	-138	105	108	113	120	121
Share issuance		53	279	72	120	123	123	123	123	123
Share repurchase		-3	2	3	-8	2	3	-	-	-
Dividends paid to companys shareholders		-384	-529	-735	-744	908	838	987	1 076	968
<b>Cash flows from financing activities</b>		<b>-536</b>	<b>-440</b>	<b>-1120</b>	<b>-806</b>	<b>892</b>	<b>825</b>	<b>978</b>	<b>1 073</b>	<b>966</b>
FX Translation		-	-	-	7	-	-	-	-	-
Change in Cash and Cash equivalents		371	-603	369	10	41	81	15	45	124
Beginning Cash		323	694	91	459	469	428	347	361	406
Ending Cash		694	91	460	469	428	347	361	406	283

## Appendix 9. Unlevered Free Cash Flow Projections

Unlevered Free Cash Flow Projections:	Units	Historical				Forecast				
		2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Revenue:</b>	millions	<b>10 127</b>	<b>9 935</b>	<b>12 398</b>	<b>11 775</b>	<b>15 199</b>	<b>16 082</b>	<b>17 870</b>	<b>20 188</b>	<b>21 010</b>
Annual / Annualized Revenue Growth Rate:	%		-1,9 %	24,8 %	-5,0 %	29,1 %	5,8 %	11,1 %	13,0 %	4,1 %
Operating Income (EBIT):	millions	568	635	1 010	1 034	1 486	1 370	1 615	1 760	1 580
Annual / Annualized Operating Margin:	%	5,6 %	6,4 %	8,1 %	8,8 %	9,8 %	8,5 %	9,0 %	8,7 %	7,5 %
Less: Taxes, Excluding Effect of Interest:	millions	-136	-152	-242	-248	357	329	388	422	379
<b>Net Operating Profit After Tax (NOPLAT):</b>	millions	<b>432</b>	<b>483</b>	<b>768</b>	<b>786</b>	<b>1 129</b>	<b>1 041</b>	<b>1 227</b>	<b>1 337</b>	<b>1 200</b>
Total Adjustments for Non-Cash Charges:	millions	17	202	377	3	195	208	232	264	276
Total Changes in Operating Assets & Liabilities	millions	452	337	789	216	94	82	169	218	76
<b>Less: Capital Expenditure</b>	millions	<b>-150</b>	<b>-112</b>	<b>-126</b>	<b>-143</b>	<b>258</b>	<b>257</b>	<b>268</b>	<b>283</b>	<b>273</b>
<b>Annual Unlevered Free Cash Flow:</b>	millions	<b>717</b>	<b>168</b>	<b>1 054</b>	<b>424</b>	<b>769</b>	<b>658</b>	<b>896</b>	<b>1 009</b>	<b>728</b>
Annual / Annualized FCF Growth Rate:			-123 %	-726 %	-60 %	82 %	-14 %	36 %	13 %	-28 %
Present Value of Unlevered Free Cash Flow:						732	595	771	826	567
Annual EBITDA:	millions	678	752	1 151	1 211	1 672	1 567	1 834	2 007	1 837
EBITDA Growth Rate			10,9 %	53,1 %	5,2 %	38,1 %	-6,3 %	17,1 %	9,4 %	-8,5 %
Invested Capital incl. Goodwill	millions	1 075	1 457	1 477	1 572	1 551	1 366	1 171	934	1 176
<b>ROIC incl. Goodwill</b>	%	<b>40 %</b>	<b>38 %</b>	<b>52 %</b>	<b>52 %</b>	<b>72 %</b>	<b>71 %</b>	<b>97 %</b>	<b>127 %</b>	<b>114 %</b>
Invested Capital excl. Goodwill	millions	151	106	527	196	195	358	527	735	993
<b>ROIC excl. Goodwill</b>	%	<b>-286 %</b>	<b>-2145 %</b>	<b>-365 %</b>	<b>-217 %</b>	<b>-577 %</b>	<b>-376 %</b>	<b>-278 %</b>	<b>-212 %</b>	<b>-139 %</b>

## Appendix 10. Valuation (DCF) Analysis - Assumptions &amp; Output

Valuation (DCF) Analysis - Assumptions & Output	
Discount Rate Terminal Value (WACC)	6,72 %
Discount Rate Forecasted Years (WACC)	5,14 %
Baseline Terminal EBITDA Multiple:	11,0 x
Baseline Terminal Value:	kr 20 154
Implied Terminal FCF Growth Rate:	3,00 %
Baseline Terminal FCF Growth Rate:	3,00 %
Baseline Terminal Value:	kr 20 154
Implied Terminal EBITDA Multiple:	11,0 x
PV of Terminal Value	14 558
Sum of PV of Free Cash Flows:	2 888
<b>Implied Enterprise Value:</b>	<b>kr 17 446</b>
% of implied EV from Terminal Value:	83 %
Plus: Cash & Cash Equivalents	469
Plus: Equity Investments	389
Less: Total Debt:	113
Less: Noncontrolling interests:	270
<b>Implied Equity Value</b>	<b>kr 17 921</b>
Implied Share price from DCF:	kr 191
Premium/ (Discount) to Current:	25 %

Appendix 11. Economic Value Added - Assumptions & Output

Economic Value Added - Assumptions & Output	Historical				Forecast				
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Spread (ROIC-WACC)	35 %	33 %	47 %	46 %	67 %	66 %	92 %	122 %	109 %
EVA		354	687	685	1 056	1 027	1 251	1 428	1 015
PV EVA					1005	929	1077	1168	790
Sum PV EVA Forecasting Period	4 968								
Terminal Value EVA									15 098
PV Terminal Value									10 906
Invested Capital 2016									1 572
<b>Implied Enterprise Value:</b>									<b>kr 17 446</b>
PV EVA % of Enterprise Value:									91 %

Appendix 12. Sensitivity - Implied Share Price from DCF Analysis - FCF Growth and WACC (Relative Terms)

Discount Rate (WACC):	Terminal FCF Growth Rate:									
	1,00%	1,50%	2,00%	2,50%	3,00%	3,50%	4,00%	4,50%	5,00%	
4,72%	7 %	21 %	41 %	69 %	113 %	193 %	386 %	1452 %	-	
5,22%	-5 %	5 %	19 %	38 %	66 %	109 %	188 %	377 %	1422 %	
5,72%	-15 %	-7 %	4 %	17 %	36 %	63 %	105 %	183 %	368 %	
6,22%	-23 %	-16 %	-8 %	2 %	15 %	33 %	60 %	101 %	177 %	
<b>6,72%</b>	-29 %	-24 %	-18 %	-10 %	0 %	13 %	31 %	57 %	98 %	
7,22%	-35 %	-31 %	-25 %	-19 %	-11 %	-2 %	11 %	29 %	54 %	
7,72%	-40 %	-36 %	-32 %	-27 %	-21 %	-13 %	-3 %	9 %	26 %	
8,22%	-44 %	-41 %	-37 %	-33 %	-28 %	-22 %	-14 %	-5 %	7 %	
8,72%	-47 %	-44 %	-41 %	-38 %	-34 %	-29 %	-23 %	-16 %	-7 %	

Source: Authors' Compilation

Appendix 13. Sensitivity of Implied Share Price from DCF Analysis - Cost of Debt and Cost of Equity (Relative Terms)

Sensitivity of Implied Share Price from DCF Analysis - Long Term Cost of Debt and Cost of Equity										
Cost of Equity	Cost of Debt									
	1,75%	2,25%	2,75%	3,25%	3,75%	4,25%	4,75%	5,25%	5,75%	
4,75%	112 %	111 %	111 %	111 %	110 %	110 %	110 %	109 %	109 %	
5,25%	65 %	65 %	65 %	65 %	64 %	64 %	64 %	64 %	64 %	
5,75%	36 %	35 %	35 %	35 %	35 %	35 %	35 %	35 %	34 %	
6,25%	15 %	15 %	15 %	15 %	15 %	15 %	15 %	14 %	14 %	
<b>6,75%</b>	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	
7,25%	-11 %	-11 %	-11 %	-11 %	-12 %	-12 %	-12 %	-12 %	-12 %	
7,75%	-20 %	-20 %	-20 %	-20 %	-21 %	-21 %	-21 %	-21 %	-21 %	
8,25%	-28 %	-28 %	-28 %	-28 %	-28 %	-28 %	-28 %	-28 %	-28 %	
8,75%	-34 %	-34 %	-34 %	-34 %	-34 %	-34 %	-34 %	-34 %	-34 %	

Source: Authors' Compilation

Appendix 14. Multiple Valuation

Multiple valuation	Multiple valuation								
	Mkt Cap 2016	EV	EBITDA	Revenue	Adj. EBITDA Margin	EV/Revenue	EV/adj. EBITA	FCF yield 16E	
Veidekke		16 513	17 054	1 199	28 613	4,2 %	0,60 x	14,2 x	8,4 %
Skanska		88 042	91 601	7 067	145 365	4,9 %	0,61 x	12,5 x	8,6 %
PEAB		21 404	25 364	2 898	46 337	6,3 %	0,46 x	7,4 x	7,8 %
NCC		24 181	23 797	2 275	52 934	4,3 %	0,46 x	10,6 x	4,1 %
Average Peer Group						4,9 %	0,53 x	11,2 x	7,2 %
AF Gruppen		14 454	14 324	1 211	11 775	10,3 %	1,23 x	11,8 x	5,2 %
Implied Equity value mNOK									14 007
Implied Share Price	NOK								149,65

Source: Bloomberg data

Appendix 15. AF Gruppen - Liquidity and Cash Flow Ratios

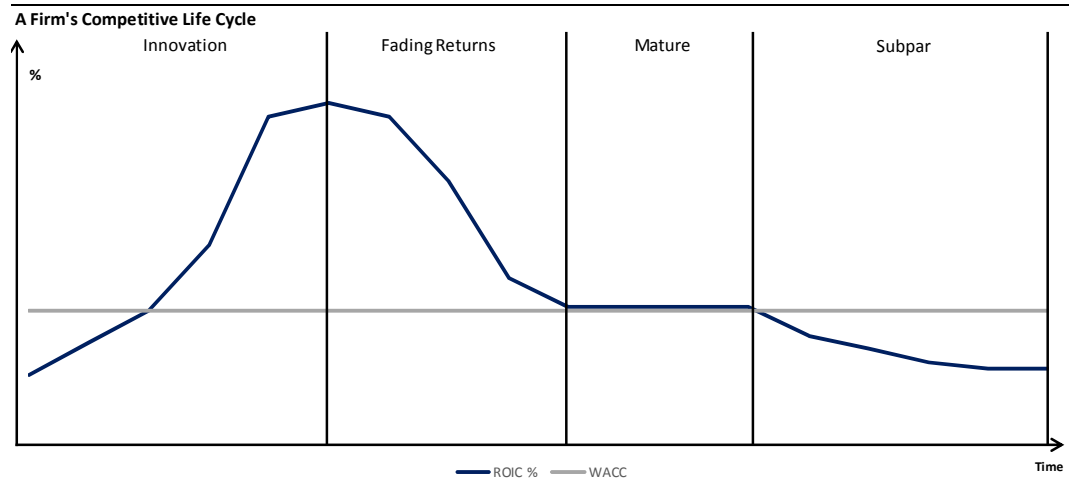
AF Gruppen - Liquidity and Cash Flow Ratios				
	2013	2014	2015	2016
Current ratio	0,91	0,78	0,62	0,67
Quick ratio	0,82	0,69	0,55	0,62
EBIT Interest Cover	71	33	27	54
EBITDA interest cover	85	40	31	64
Operating Cash Flow/ Total Liabilities (%)	26 %	2 %	33 %	18 %
Return On Invested Capital incl. GW (%)	74 %	35 %	70 %	57 %
Total Liabilities/ Total Capital (%)	74 %	72 %	70 %	70 %
EBIT Interest Cover	AAA	AAA	AAA	AAA
EBITDA interest cover	AAA	AAA	AAA	AAA
Operating Cash Flow/ Total Liabilities	AA	BB	AA	A
Return On Invested Capital incl. GW	AAA	AAA	AAA	AAA
Total Liabilities/ Total Capital	B	B	B	B
Yearly Rating	AAA	AA	AAA	AAA

Source: Authors' compilation based on data from AF Gruppen and Bloomberg

**Definitions:**

- Current Ratio = Total Current Assets / Total Current Liabilities
- Quick Ratio = Cash + Accounts Receivable / Total Current Liabilities
- EBIT Interest Cover = EBIT / Financial Expenses
- EBITDA Interest Cover = EBITDA / Financial Expenses
- Return on Invested Capital = EBIT / Invested Capital

Appendix 16. A firms competitive Life Cycle



Source: Authors' Example