

## Investment case

### ABOUT FREQUENTIS AG

Frequentis AG (the company), founded in 1948, delivers safety-critical communication and information solutions, mainly to commercial air traffic control centers, but also to clients in the defense sector, railway operators, emergency vehicles and for maritime use. The company has about 500 clients in 140 countries.

### STRENGTH, OPPORTUNITIES AND RISKS

- Frequentis enjoys a long history and has a well-established market position for products and services related to message, voice, and aeronautical systems.
- The company operates in growing markets for mission-critical safety products. Barriers to entry are high.
- Increased security requirements in areas where the company operates is a key driver of the demand. Rising need for efficiency at flight controls and public safety operations is another. Acquisitions are done to get access to additional products / technology.
- The clients are mainly public players, and the business relationships are typically long and stable.
- The company has a strong order backlog that can be converted into revenues in the upcoming years.
- The management of the company is well proven and experienced with an average of ten years at Frequentis.
- Some 20 percent of corporate revenues are generated by the five largest accounts.
- Reputational risk related to should the software and systems delivered by the company not work.
- There is a risk that customers' investments will decrease if air traffic continues to be at low levels. In this scenario, other markets will offer potential – such as railway.

### SHARE PRICE GRAPH



Source: Thomson Reuters Eikon

### CARLSQUARE EQUITY RESEARCH

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## Stable growth in high-security business

**Frequentis offer its clients market leading communication and information systems for the Air Traffic Control and Public Transport sectors, where entry barriers are high due to regulations on the suppliers. We foresee continued revenue growth. The company is trading at a rebate compared to its peers. We arrive at a justified share price of EUR 21.8 per share in a combined Base case-valuation. This corresponds to a potential upside of 19 percent for the coming 12 months.**

### Market leader with the possibility to expand its business

With some 500 clients in 140 countries in its main business area, Air Traffic Management, Frequentis holds a dominant position with its communication and information solutions for mission-critical air traffic control centers. This segment constitutes around 70 percent of Frequentis revenues and includes some business in the military defense segment. Order intake has increased despite the effects covid-19 has had on travel restrictions. Within a year or so travelling ought to return to normal conditions. Otherwise, there is a risk that these investments will be affected.

Frequentis enjoys a strong financial position being a mid-size player in a niche, where military defense company giants such as Lockheed Martin and others are focused on selling hardware. Meanwhile Frequentis, selling complementary systems, is joining forces with these larger companies in some projects, as with Thales for instance.

The client base is already found in its second business area, Public & Safety Transport. The company may also expand its business more into the Railway segment. This may also be an opportunity if the travelling habits change from air to land based in the wake of the Covid-19 pandemic.

### Order intake representing one and a half years of revenue

Following a strong H1 2020 report, Frequentis had 445 million Euro in orders at hand as of 30 June 2020, with a visibility of one and a half year. This represented a 29 percent increase in order intake compared to H1 2019. Clients are mainly public players (air traffic control authorities, state railways, police, fire and rescue services, coast guard), which means that the counterparty risk is very low.

### Upside in operating margin and valuation

Due to high R&D-costs, Frequentis EBIT-margins are at single-digit levels. One way to increase profitability is to streamline R&D-operations and to encourage customers to choose more generic solutions.

We estimate the combined DCF- and peer group value of the Frequentis stock in our base case-scenario to 21.8 Euro per share. This corresponds to a 19 percent share price potential. In our Bear- and Bull-scenarios the weighted share values are 17.0 and 26.4 Euro, respectively.

### Financials, EURm

	2018	2019	2020P	2021P	2022P	2023P	2024P
Revenues	286	304	315	335	345	360	380
EBITDA	21,6	30,2	34,4	37,1	38,5	40,6	43,3
EBIT	15,6	17,2	20,4	22,5	23,6	25,2	27,4
Earnings per share, EUR	0,94	0,93	-0,60	1,19	1,25	1,34	1,45
Dividend per share, EUR	0,00	0,15	0,20	0,20	0,20	0,20	0,20
Revenue growth	7,1%	6,3%	3,7%	6,3%	3,0%	4,3%	5,6%
EPS growth	14%	-1%	n.m.	n.m.	5%	7%	8%
EBITDA-margin	7,6%	9,9%	10,9%	11,1%	11,2%	11,3%	11,4%
EBIT-margin	5,5%	5,7%	6,5%	6,7%	6,9%	7,0%	7,2%
EV/Sales	0,6x	0,6x	0,6x	0,5x	0,5x	0,4x	0,3x
EV/EBITDA	7,8x	6,4x	5,1x	4,7x	4,2x	3,6x	3,0x
Net Cash	40	61	53	68	83	99	116
P/E	18,5x	21,5x	n.m.	15,4x	14,7x	13,8x	12,7x
EBITDA-margin	7,6%	9,9%	10,9%	11,1%	11,2%	11,3%	11,4%

Sources: Company information (2018-2019) and Carlsquare estimates (2020-2024).

## Investment case

The Frequentis Group (Frequentis or the company) is a well-established player within the space of mission-critical systems acting on the global market. Regulatory requirements and need for improved efficiency are solid drivers of the underlying demand for the company's solutions, even during the pandemic. Acquisitions are done to get access to additional products to address more of the EUR 13 billion control center market – currently EUR 2 billion can be addressed. The outlook is in favor for the company to grow steadily during the upcoming years to improved margins – based mainly on the transformation towards more software and less hardware products. We calculate a motivated value per share of EUR 21.8 for the upcoming 6-12 months.

### Investment case: Stable growth outlook at a rebate

Frequentis was established back in 1948 and has since then established a strong presence with public clients all over the world, and among Air Traffic Control centers. Public transport clients, including the emergency vehicle, is another important client segment.

Frequentis has a strong global presence with its mission-critical Traffic Control Center solutions

The historical growth has been supported by a strong reputation earned over the many years. This reputation and the many reference clients create a barrier to entry, which is deemed challenging for any new competitor to surpass in our view. This provides a market with similarities to an oligopoly where players like Frequentis should have good opportunities to make good money for several years to come.

Despite the market growth there are additional fields of growth like drone management, Digital Remote Towers, and the introduction of existing technologies like 5G/LTE into the safety-critical environment of, for example, the public safety area like police / fire brigade control centers.

In our view, the company's market presence is relatively strongest in Europe. New business tends to be in the fast-growing Asian region where the company has established a local presence.

Despite the many hurdles that the spread of Covid-19 has brought along, the order book of Frequentis was strong as of 30 June 2020 and provides encouraging prospects at least for the next year or so. In case the pandemic causes long term changes in the traveling activities, the company can shift its business towards land-based transportation, such as train. This market offers additional potential for the company, nevertheless the long-term effects of the pandemic.

At the same time, the potential effects of the pandemic should not be ignored and could potentially decrease the propensity to invest among clients in current target segment of the market. In such scenario it would of course take the company some time to readjust its revenue flows to new sub-segments.

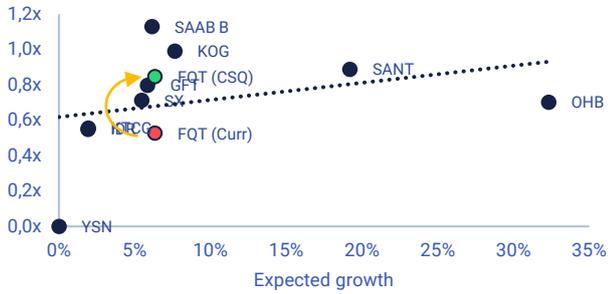
### Motivated value of EUR 21.8 per share

The Frequentis share is valued at a 27 percent discount to its peer group, which gives a significant upside valuation potential in the share price. We arrive at a motivated value per share of EUR 21.8 by combining the outcome of our DCF-model with a peer valuation. The base case valuation of EUR 21.8 per share lies within the interval of EUR 17.0 per share, in our Bear-case and EUR 26.4 in our Bull-scenario.

The Frequentis share is traded at a discount to its peer group.

Below Frequentis current trading EV/Sales and EV/EBIT-multiples against peers is shown. This along with implied multiples from our valuation illustrates that the Frequentis share is traded at a discount to its peers.

**EV/Sales and growth 2021E**



Frequentis = FQT. Source: Reuters Thomson Eikon, Carlsquare estimates.

**EV/EBIT and EBIT-margin+growth 2021E**



Frequentis = FQT. Source: Reuters Thomson Eikon, Carlsquare estimates.

## Security and mobility the growth drivers

Frequentis has established a strong position in growing segments of software and solutions for Air Traffic Control communication. The solutions provided by the company also targets defense, railway, and emergency vehicles etcetera.

Frequentis, founded in 1948 and with some 1,900 employees, delivers mission-critical message, voice and other communication systems and software to all sorts of control centers. The company has established a strong market presence with a broad number of system solutions components installed worldwide.

Frequentis has a strong global presence with its mission-critical Traffic Control Center solutions

Frequentis installed its first Air Traffic control system at Vienna Airport in 1955 and has built its footprint in the sector ever since. Since then, the company has established more than 25,000 air traffic working positions. Today, the company has some 500 clients in 140 countries. The market share is estimated to about 30 percent in the voice communication systems in the civil Air Traffic Control segment and a leading position in messaging solutions globally. The company's main markets are Germany, the United Kingdom, the United States, China, Australia as well as in every Scandinavian country. Long term historic annual organic revenue growth has been 5-7 percent.

The systems and products that Frequentis deliver has high security requirements, linked to flight safety but also voice and messaging systems for the fire brigades, ambulances, and police, which must work since it could be a matter of life or death. This means that there are high entry barriers in this market where reputation and reliability should be recognized over many years.

There are some highly competitive tenders in the market though, since there are public clients involved. Frequentis already have a large client base and therefore is not forced to participate in all new tenders. The focus of the company is on its installed base business with its current clients, where the margins are higher than its other business.

The main growth drivers for Frequentis business are security, general demand for mobility and flight capacity constraints. Despite the Covid-19 pandemic, the company's clients have continued to invest in Air Traffic Control solutions provided by Frequentis, proven by the strong order intake for Frequentis. However, should the Covid-19 pandemic continue for more than a year, this could affect investments done by Air Traffic Control clients. There was a dip in the growth pace for Frequentis linked to 9/11 (in 2001), but also during the Lehman crisis in 2008 (when corporate finance operations/facilities were restricted for a while).

The main growth driver for Frequentis business is increased mobility, though order intake has not yet been negatively affected by the Covid-19 pandemic.

**Organizational view of Frequentis Group**

**FREQUENTIS-GROUP**



Source: Company information.

In FY 2019 Frequentis reported revenues of EUR 304 million with an annual growth of 6.3 percent. Meanwhile corporate revenues were almost unchanged in H1 2020 with EUR 132 million. Frequentis has a clear seasonal variation, with the bulk of the company’s revenues coming during the second half of the year. With order intake increasing by almost 30 percent during H1 2020, we foresee a stable second half of 2020 for Frequentis.

All orders are secure transactions bound by a signed agreement with the customers and with a fixed delivery time (for example March or June 2021 calculated from November 2020).

**Large global market with high barriers to entry**

Frequentis is a recognized specialist in its field where the entry barriers for new competitors are high. This is linked to reliability and trust, gained from a long track record where any failure in safety could endanger lives or sensitive military information for example.

Frequentis addressable market has been estimated to EUR 2 billion per year globally. Including related products and services to the company’s customers the value of the market increase to some EUR 13 billion. This is a market dominated by companies that have been qualified for a long time on the supplier side and by public purchasers.

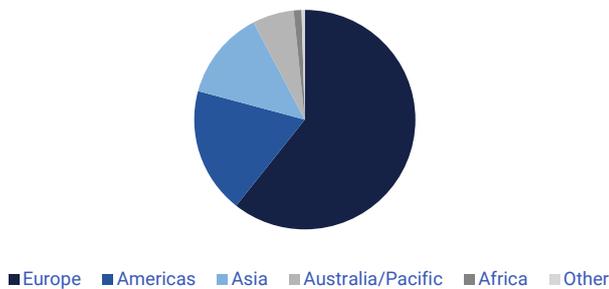
**Business model and clients**

The company develops and integrates its own software at the Air Traffic Control and other clients control centers. It also integrates configured hardware components for communication and information systems used in the control centers. The products and systems are for speech and data communication and integrated into the client’s network.

The company provides systems used for safety of personal and goods.

Although the company has clients worldwide and to an increasingly part in new projects in Asia, Europe still dominated with around 60 percent of Group revenues in FY 2019.

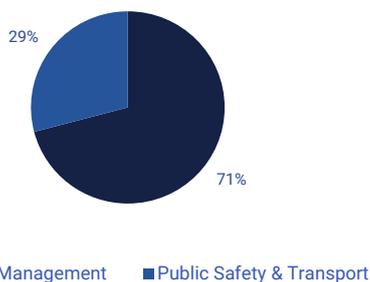
**Regional distribution of revenue in the Frequentis Group, FY 2019**



Source: Company information.

The Air Traffic Management division stands for some 70 percent of Group revenues, while the remaining 30 percent is attributable to the Public & Safety Transport division.

## Distribution of revenue by business area in Frequentis Group, FY 2019



Source: Company information.

Out of the revenues from the Air Traffic Management division, we estimate that some 50 percent is new business, while 20-25 percent each represents maintenance and other work at the installed base while in the range of 0-5 percent is consulting services.

Measured by customer segments at a group level, we estimate that approximately 50 percent of the client base relates to civil aviation and below 20 percent to defense clients.

### Business practices and processes

Since there are mostly public clients in these sectors, new assignments often come via tenders. Follow-up work though is often attained from these public clients and where we believe that pricing and profitability is better for Frequentis compared to the initial assignments received under the tenders. Once the company has established itself at, for an example, an airport traffic control, the cost as well as the security aspect for a customer to change supplier is considerable.

Apart from procurements, the sales and delivery cycle can be divided into four different stages- which are quite similar compared to other industries.

- Lead generation
- Sales phase
- Delivery phase
- Support service phase

The cash flow of a supplier in such projects is limited in the first phases but improves gradually during the project implementation period.

### Targets and sales efforts

Frequentis aims at around 15 new projects each year where emerging markets like Asia tend to be most common. Meanwhile around 40 percent of Frequentis projects relates to their installed base with existing clients.

The average value of a customer project for Frequentis is estimated to 700 thousand Euro. This is explained by the many function upgrades, maintenance and replacements that are done for the client base.

The sales efforts are conducted via three different channels.

- Direct sales (where Frequentis deliver either themselves or via a subcontractor)
- Sales via partners, where Frequentis normally delivers a part of the project.
- Via a consortium with other companies

## Air Traffic control management

Frequentis provides all products that is needed by Air Traffic Control centers, where the most essential part is the integration of voice and data communication into existing network. Such systems have been installed at several hundred sites over the years. There are three main components of control center solutions.

- Tactical situation report
- Planning & Management
- Voice & Data Communication

A description of the product portfolio is made below:

- Voice communications systems (between people)
- Aeronautical message systems
- Air Management networks
- Distribution network for surveillance data
- Network monitoring and optimization tools
- Recording systems for voice and data
- Electronic flight strips for civil and military air traffic control
- Aeronautical information databank
- Air situation picture for civil and military air traffic including sensors
- Real-time camera views for air control towers
- Tracking & tracing systems for shipping

### Illustrative graph of products and systems delivered by Frequentis



Source: Company information.

Frequentis assists its main customers, Air Navigation Service Providers worldwide, for them to deliver more capacity and increase efficiency for airspace users. This includes some innovative products by Frequentis such as Remote Tower for example, described later in this report.

The main voice communication product of Frequentis is labelled VCS3020X. The product has some key features such Collaborative Air Traffic Management that enable the shared use of infrastructure between area control centers including the functions of air towers. It also has an end-to-end IP that secures VOIP (Voice over IP). Through its Virtual Centre concept Air Traffic control functions can be shared between different countries.

Frequentis offer end-to-end network solutions which provide routing of voice and data communication. The company has solutions for network design, as well as the management and operation in air traffic control space.

The systems provided by Frequentis is in the forefront when it comes to digitalization. Information in these systems include access to arrival and departures of flights, weather, airport status, aeronautical reports etc-etera. A flight handling system use electronic flight strips to reduce workload at the airports. A surveillance system for the tower and airport terminal(s) improves the situational awareness.

The Aeronautical Information systems is made up of modular components (own or delivered by a third-party). The components are scalable from smaller to larger clients. The company also provides aeronautical message systems to its clients.

### **Military defense applications**

Frequentis has developed secure information systems for military communication. The standard corporate product in this field is iSec COM secure audio switch (iSAS), which is the world's smallest switch, supported by the German Federal Office. The iSAS system has been field-proven and fulfils the demanding criterias to work in different environments.

Frequentis has also developed a military networking solution, which has been tested in the field. It should work regardless of the command center is in a fixed location or is mobile. The company has also launched a framework which allows flexible communication between joint command centers (i.e., predominately used by NATO countries), that include aeronautical information. This could also be used by the air police or border control for example.

The Remote Tower systems also have versions for military usage.

## Products/solutions with a special potential

Frequentis has developed three interesting high-tech solutions, which are expected to particularly increase corporate revenues. These are the Digital Remote Tower solution and drone management belonging to Air Traffic Control management and 5G/LTE solutions in Control centers which is attributable to the Public Safety & Transport business.

- Digital Remote Tower is an air traffic control tower that can remotely control the monitoring of one or more airports that may have too low traffic volumes for them to be fully staffed 24 hours a day. It is then replaced with remote-controlled cameras for surveillance. An example is a control center in Leipzig, Germany that monitors three smaller airports in Saarbrücken, Erfurt and Dresden (the distance between Leipzig and Saarbrücken being 500 km). The Digital Remote Tower solutions have been installed in Denmark, Germany, the United Kingdom, Brazil, New Zealand and just recently also the first one in the United States.
- Drone Management. As the use of drones becomes more common both for military and civil purposes, the safe integration and surveillance of this traffic becomes increasingly important. For Air Traffic Control centers, it is of the utmost importance to control the flow of drones near the airport and especially those flying at low altitude.

## Public Safety and Transport solutions

Control center solutions for public safety and transport is the second business area of Frequentis with some 30 percent of the Group's annual revenues. On the revenue part of some 30 percent that is attributable to the Public & Transport division, we estimate that 40-50 percent consist of Public Safety, while about 35-40 percent are Public Transport and 10-20 percent come from Maritime customers.

Public Safety, Public Transport and Maritime are the three segments in the Public Safety and Transport solutions division.

The task of these control center is to either control the traffic or organize security on i.e., larger events. The company provides inhouse-developed software and configured hardware components for communication and information systems, like the Air Traffic Control division.

### Emergency Services

This segment includes products and solutions aimed for fire brigades, the police, ambulance vehicles etc. The system provided by Frequentis use full recording of all available information during an emergency incident. The use of standard web technology allows key information to be presented on any mobile device. The software developed by the company is modular and could be integrated in the client's infrastructure and/or network.

One of the larger installations made by Frequentis was aimed for the London police in 2012 ahead of the summer Olympics.

### Public transport

In this segment Frequentis has its focus on railway operators with an estimated 5 percent global market share. The company has developed a fixed-terminal system that enable centralized and unified communication between different local radio networks. This centralizing of the information system is also used for incidents and crisis management. Frequentis has a strong presence in the public railway sector, especially in Germany, Switzerland, and Austria.

Frequentis enjoys a strong presence in the public transport sector in the DACH countries.

There is scope for improvement in the sector. There is much to do when collecting and then distributing information in local systems to one central system. Introducing of LTE-based networks in the coming years should also give Frequentis new assignments. Further to that, national signal systems on public railways will be more standardized over the borders in Europe. Another change is expected further high-speed trains, which calls for communication systems with a higher performance.

## Maritime sector

In the Maritime sector (shipping) Frequentis system are predominately used to search and rescue ships and passengers in connection with accidents. In the maritime segment, digitalization is a major driver of new projects, making it possible to communicate between ships but also with harbor terminals. In the bulk carrier segment, an increased amount of data analysis can make the transports able to control by remote and in the longer term, even to be autonomous.

## 5G/LTE in Control Centers

Frequentis is part of phase 2 of the European investment procurement program Broadway 5G and LTE provide opportunities to introduce the Whats App or Video as receiver for e.g., the fire brigade or the police in the Public & Safety Division of Frequentis. The police can also have a body camera whose images goes directly to a control center using the new technology. There is a public safety project in the United Kingdom that will include 5G/LTE.

## An ambition to streamline & trim R&D operations

Frequentis hold some 20 patents and trademarks that cover various countries worldwide, but predominately in Europe.

Costs for research & development are included in the profit and loss statement. The expenditure for in-house research & development activities were at EUR 22 million in FY 2019. In extreme examples the R&D-part of a product/software-development could be 20 percent of its revenues.

A higher proportion of generic products should improve operative margins.

Development of software product or a system can take up to several years to develop. Frequentis is trying to trim its Research & Developments (R&D) operations to boost its operating margins. But customers tend to order tailored products, which may explain why Frequentis only has a 70-75 percent gross margin on its sales and not 85 percent as core software company. Another explanation may be that the Air Traffic Control has higher margins compared to other parts of the Frequentis business.

## Market overview

Frequentis targets a market worth 2 billion Euro with a market share of some 15 percent. With high entry barriers and some co-operation with large players like Defense giants in different projects, there is scope for good growth and earnings in the next years.

### A strong mid-size player with a software focus

Frequentis' addressable market amounts to 2 billion Euros per year globally of a total market to the company's customers worth 13 billion Euros. Airport traffic controls replace their equipment in between 2 and 20 years, so it can be a mixture of old and new products and systems at such a workplace.

Frequentis reach out to a global market worth some 2 billion Euros.

Frequentis has some fifteen main competitors in three different categories; The smaller competitors have a turnover of 50-100 million Euros per year and work locally in individual countries. Frequentis itself is a mid-sized one-stop-shopping company with a focus on software. Then there are giants such as Thales, Airbus, Lockheed Martin and Raytheon and other defense-oriented corporations. The larger players are focusing on selling hardware where their margins are higher (unlike the software and systems Frequentis does).

Competitors are divided into three different size categories.

80 percent of the orders that Frequentis receives are delivered by themselves while 20 percent are subcontractor jobs.

The product and service providers have proven their reliability and availability in earlier deliveries, which they ought to be since they are mission critical. This is a recognition and reputation phase which it takes a long time to attain. The entry barriers for this kind of business are therefore high. Consolidation of the sector into fewer and more focused entities has begun with some companies or divisions being acquired by others.

## Competitors

Below we have listed seven of Frequentis major competitors with a business description attached to each of them. These are all quoted companies so the valuation multiples for each of them are found in the valuation section of this report.

**CS Group SA, formerly known as Cs Communication & Systemes SA**, is a France-based company that is principally engaged in the design, integration, and operation of mission critical systems. It provides a variety of solutions for the defense, space, and security; energy and industry; transportation, and aeronautics sectors. The Company is specialized in the fields of operations, command and control, secure communications, training and simulation, cybersecurity, safety critical systems, data, and process intelligence. The Company distributes its products in France and is also present in the rest of Europe, the Americas, Africa, and Middle East.

**Indra Sistemas SA** is a Spain-based company engaged in the field of information technology (IT). The Company divides its activities into two segments: Solutions and Services. The Solutions segment provides consulting and technology solutions, such as systems and components for compiling, processing, transmitting, and presenting data for use in the control and management processes. The Services segment offers the IT and business processes outsourcing. The Company is present in various sectors, such as transportation, energy and industry, public administration, and healthcare, financial, security and defense, telecommunications, and tourism. The Company is a parent of numerous subsidiaries, which operate in Europe, Africa, North and South America, Asia, as well as Middle East and Pacific region.

**Kapsch TrafficCom AG** is an Austria-based provider of intelligent transportation systems (ITS) in the fields of tolling, traffic management, smart urban mobility, traffic safety and security, and connected vehicles. The Company offers end-to-end solutions, from components, through design and installation of systems, to technical and commercial operation of these systems. It operates through two segments: Electronic Toll Collection (ETC) and Intelligent Mobility Solutions (IMS). The ETC segment includes projects for the construction, maintenance and operation of systems that include electronic toll collection for the payment of tolls without stopping at a toll station, as well as manual toll collection systems. The IMS segment includes systems for traffic monitoring and safety, control of commercial vehicles and electronic vehicle registration, intelligent parking, and intermodal mobility, as well as operational monitoring of public transport and environmental facilities.

**Kongsberg Gruppen ASA** is a Norway-based company engaged in the supply of technology systems and solutions to customers in the oil and gas industry, the merchant marine and the defense and aerospace industries. The Company's operations are structured into three operating segments: the Kongsberg Maritime segment delivers products and systems for dynamic positioning, navigation and automation for commercial vessels and offshore installations, as well as products and systems for seabed surveys, surveillance, hydroacoustics, for fishing vessels and fisheries research. The Kongsberg Defense & Aerospace (KDA) segment is Norway's supplier of products and systems for command and control, weapon control systems and surveillance, remote weapon stations and missiles. Other activities include Kongsberg Digital (KDI), offering maritime training simulators and digitization solutions for the energy sector, among others.

**OHB SE** is a Germany-based company, which focuses on the space technology. The Company operates in two segments: Space Systems, developing and executing space projects, low-orbiting and geostationary small satellites for navigation, research, communications, and earth observations including scientific payloads; and Aerospace + Industrial Products, responsible for fabricating aviation and space products as well as other industrial activities. The Company operates through several subsidiaries located in Germany, Italy, Luxembourg, Belgium, France, Sweden, the United Kingdom and French Guiana.

**S&T AG** is an Austria-based supplier of information technology (IT) solutions, specializing in Industry 4.0, embedded computer systems and Internet of Things (IoT) technology. The Company operates through three segments: IT Services, which handles the end-to-end realization of IT projects, from planning (consulting), through implementation (integration) to long-term operation (outsourcing). IoT Solutions, which focuses on the development of IoT and Industry 4.0 solutions combining hardware, middleware and services marketed to the industrial automation, medical technologies, infotainment, and smart energy sectors. Embedded Systems, which provides hardware featuring embedded technologies used by the transport, aviation, and communication sectors. The Company is a full-service-provider of IT services in Central and Eastern Europe. Its core markets are Germany, Austria, Switzerland, Eastern Europe, and North America.

**Saab AB** is a Sweden-based company offering products and services ranging from military defense to civil security. The Company's operations are divided into six business areas. The Aeronautics includes the development of civil and military aviation technology, including the Gripen and Unmanned Aerial Systems. The Dynamics comprises a product portfolio of weapon systems, such as support weapons, missiles, Remotely Operated Vehicles, and signature management systems. The Electronic Defense Systems provides airborne, land-based, and naval systems and radar, signals intelligence and self-protection. The Security and Defense Solutions provides the military and civil security market with, among others, computerized command, control, communications, and intelligence systems. The Support and Services offers service and support to the Saab's clients. Among others, the Company operates through Thyssen Krupp Marine Systems AB and Nordic Defence Industries, a producer of mine disposal charge systems.

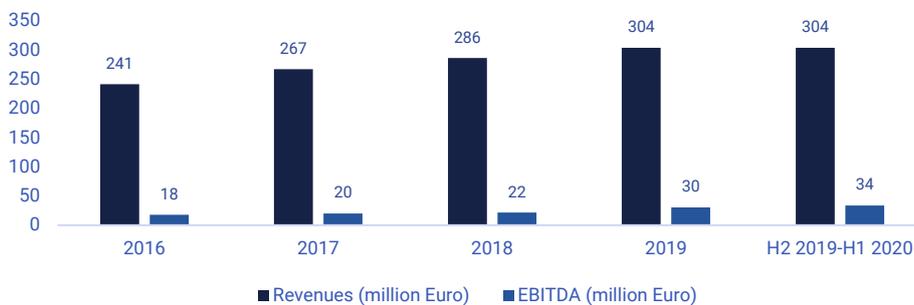
## Financial development and forecasts

With strong financials (a net cash position of EUR 51m) and stable revenue growth with improvable EBIT margins the case for Frequentis earnings looks promising in coming years. A strong order intake in H1 2020 paved the way for an improved result both for H2 2020 as well as FY 2020 and 2021.

### Total revenues

When studying historical financial data for the Frequentis Group, our overall impression is a stable and moderate revenue growth, combined with sufficient but rather low operating margins. This is illustrated in the graph below, where we show Group revenues and EBITDA for FY 2016 until FY 2019 plus rolling twelve months from H2 2019 through H1 2020. The Group has obtained a combined average revenue growth of 8.0 percent between 2016 and 2019 and 8.7 percent growth rate from 2011 until 2019. The revenue growth has been obtained via predominately organic growth, but also via acquisitions.

#### Historical revenue and EBITDA 2016-H1 2020 for the Frequentis Group (EURm)



Source: Company Information.

A special circumstance about Frequentis's result is its strong seasonal variations. The first half of the year results usually in a loss, while the second half of the year contributes with a greater positive result.

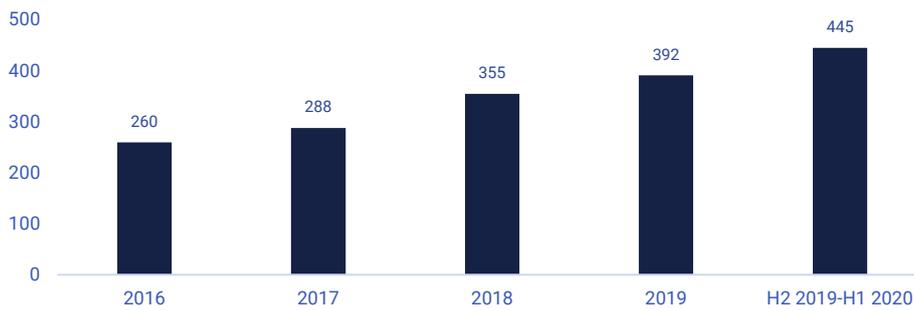
#### Seasonal result variations (EBIT in million Euro) for Frequentis Group 2015-2020



Source: Company Information.

The most important indicator for the company's development, however, is order intake, which has shown stable growth in recent years. This is illustrated in the graph below. Air Traffic Management had 59 percent of the Group's order book as of December 31, 2019, a share that had increased to 63 percent as of June 30, 2020. The remaining 41 and 37 percent respectively, fell on the other business area, Public Safety & Transport.

### Historical order intake (million Euro), 2016-H1 2020 for the Frequentis Group



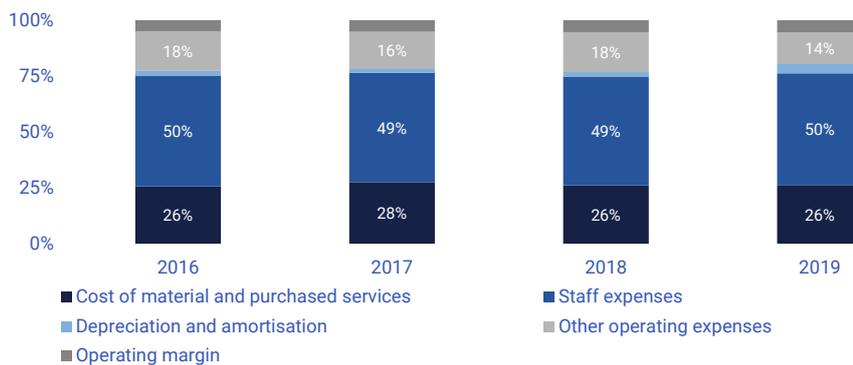
Source: Company Information.

### Cost structure

When studying Frequentis's income statement and the different types of costs, it becomes obvious that this is a project and service company with relatively large staff costs. The four different cost types as a share of reported revenues over the past four years are illustrated in the graph below.

While the company reaches a gross margin of some 75 percent, the operating margin is only about 5 percent. The difference consists mainly of considerable staff costs. The projects are personal-intensive with software adaptations etc.

### The share of the various cost types in Frequentis's revenues 2016-2019



Source: Company Information.

### Financial in the projects won

Competition to win a new project in a tender process is usually strong. The cashflow profile of the lifecycle is usually negative in the beginning of a project. Once a company has won a contract, profitability should gradually increase with contribution from the installed base but also new upgrades of software etcetera.

When a fixed-price-contract has been established, there is a risk of cost-overruns later in the project, which Frequentis may then find it difficult to compensate for.

### Extraordinary one-off charge for loss in Mattersburg Bank

An extraordinary cost for Frequentis during H1 2020 was a provision of EUR 31 million, linked to the Austrian Financial Market Authority revoking the permit for Commerzialbank Mattersburg in Burgenland, where Frequentis had deposited a corresponding amount. Despite this loss, Frequentis held a net cash position of 51 million Euros as of 30 June 2020. Via its lawyers the company tries to reclaim as much as possible of its receivables from Commerzialbank Mattersburg.

## Acquisition criteria set by Frequentis

Frequentis aims to acquire family-run companies run by entrepreneurs where the founding families continue to work after the purchase. They want to add products and technologies where there is no requirement for synergies with Frequentis own business. This is since Frequentis already have enough of their own customers, and do not necessarily need new ones.

In terms of size of acquired objects, the guideline is 10 percent of Frequentis revenues, which corresponds to around 30 million Euros in annual sales.

The acquired companies should preferably have about the same profitability as Frequentis from the start. Only exceptionally can the company consider acquiring loss-making or distressed assets.

Frequentis might own 51 percent or more of an acquired company, but rarely 100 percent. This is due to incentive reasons, but in the long run Frequentis can purchase 100 per cent of the shares in such a company.

From a financial point of view, Frequentis wants to avoid increasing its bank debt when purchasing new companies. They therefore finance new acquisitions via its own liquid funds or bank debt if useful.

A somewhat opportunity-driven acquisition was made by Frequentis in 2016, when they bought the Air Traffic Management business of Comsoft. This was possible since this company had faced financial problems, after having taken on capital-intensive projects.

A rather recent purchase was that of the German ATRiCS Advanced Traffic Solutions GmbH, which in our view is rather near Frequentis own operations. ATRiCS provide software products and services to Air Navigation service providers.

## Valuation

By combining our DCF-valuation model with a peer valuation model we calculate a motivated value per share of EUR 21.8 in our base case. This motivated value varies from EUR 17.0 per share in our Bear-scenario to EUR 26.4 per share in our Bull-scenario.

### DCF-valuation, base case: EUR 18.4 per share

To calculate a justified Market value of Frequentis, we have used a DCF model. In the model we calculate expected future cash flows with an annual discount rate of 10.6 percent. Given these assumptions we arrive at a justified enterprise value for Frequentis of EUR 244.5 million or 18.4 Euro per share. Our revenue forecasts correspond to a CAGR of 4.6 percent for the period 2019-2025 and a long-term sustainable EBITDA-margin of 11.5 percent.

The required return on equity is calculated using the CAPM model. In the model, we have set a risk-free interest of zero percent assignable to a ten-year German government bond and a beta value for the Frequentis share of 0.8x. The market risk premium is assumed to be 7.7 percent in line with PwC's "Risk premium on the Swedish stock market" from June 2020. To the market risk premium, we have added a small cap premium of 2.0 percent, which corresponds to the interpolated small company premium for a company with a market value of SEK 2 billion (Euro 200 million) – in line with PWC's risk premium study. Furthermore, we have assumed that Frequentis finances itself with 100 percent equity. The annual discount rate is thus calculated with our assumptions at 10.6 percent. For the calculation of the residual value, we have estimated a sustainable growth rate of 2.0 percent per year, which is assumed to be the normal level for the risk-free interest rate over time. The discount rate of 12.6 percent is used for the present value calculation of the residual value in the DCF-valuation.

#### DCF valuation of Frequentis, Base case scenario

DCF valuation:		Discount rate forecast period:		Assumptions:	
Present value cash flow (UFCF)	78,0	Risk-free interest-rate, forecast period:	0.0%	CAGR, 2019-2025	4.6%
Present value residual value	115,3	Market risk premium:	7.7%	EBITDA-margin, 2025	11.5%
<b>Enterprise value (EV)</b>	<b>193,3</b>	Small-cap premium:	2.0%	EBIT-margin, 2025	7.4%
		Beta	0.8x	Tax rate:	25.0%
Cash	58,2	<b>Re</b>	<b>7.8%</b>	Company-specific risk:	2.4%
Interest-bearing debt:	-7,0			Discount rate TV	12.6%
<b>Justified share value:</b>	<b>244,5</b>	Tax adjusted credit interest	4.5%		
		Loan-to-value:	0.0%		
Current no of shares:	13,3			<b>Valuation multiples:</b>	
New shares due to dilution	0,0	WACC	7.8%	EV/Sales, 2020E	0.6x
No of shares	13,3	Company-specific supplement:	2.4%	EV/EBITDA, 2020E	5.6x
				P/S, 2020E	0.8x
<b>Justified value per share, Base</b>	<b>18,4</b>	<b>Discount rate:</b>	<b>10.6%</b>	P/E, 2020E	n.m.

Sources: Carlsquare estimates

The valuation shown above gives the following implied valuation multiples:

#### Implied valuation multiples

Valuation multiples	2019	2020	2021	2022	2023	2024	2025
P/S	0,8x	0,8x	0,7x	0,7x	0,7x	0,6x	0,6x
P/E	20,7x	-30,9x	15,4x	14,7x	13,8x	12,7x	11,4x
EV/Sales	0,6x	0,6x	0,6x	0,6x	0,5x	0,5x	0,5x
EV/EBITDA	6,4x	5,6x	5,2x	5,0x	4,8x	4,5x	4,1x

Sources: Carlsquare estimates

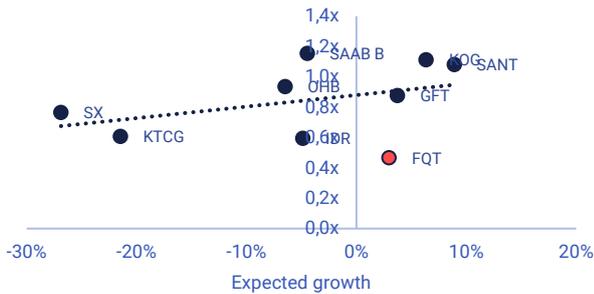
In our Bear scenario, we assume that the Group's EBIT will be 25 percent lower than our Base case forecasts for the years 2020-2025. We then get a DCF-value of 14.2 Euro per share.

Correspondingly, we assume in our Bull scenario that the Group's EBIT will be 25 percent higher than our Base case forecasts for the years 2020-2025. This results in a DCF-value of 22.3 Euro per share.

### Peer valuation, base case: EUR 25.2 per share

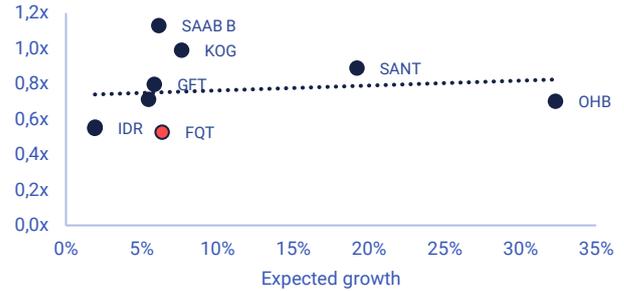
Frequentis is currently valued at an average discount of 27 percent, to its Enterprise value measured on EV/Sales- and EV/EBIT-multiples, compared to this peer group. Below are four positioning diagrams for Frequentis current trading against its peer group.

#### EV/Sales and growth 2020E



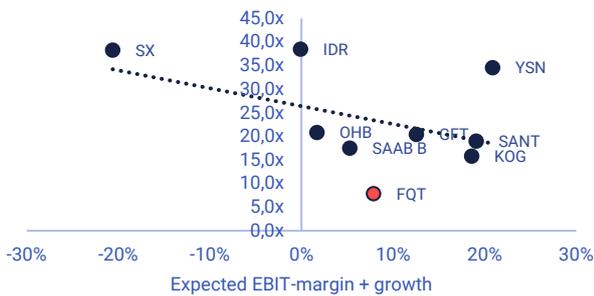
Frequentis = FQT. Source: Reuters Thomson Eikon and Carlsquare

#### EV/Sales and growth 2021E



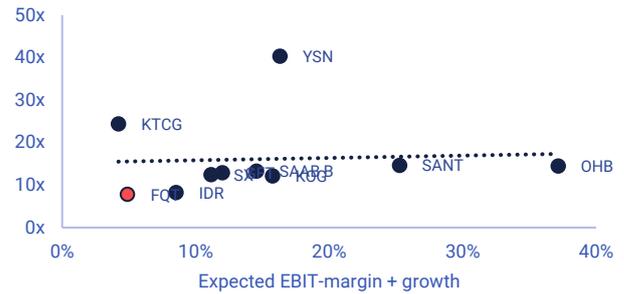
Frequentis = FQT. Source: Reuters Thomson Eikon and Carlsquare

#### EV/EBIT and EBIT-margin+growth 2020E



Frequentis = FQT. Source: Reuters Thomson Eikon and Carlsquare

#### EV/EBIT and EBIT-margin+growth 2021E



Frequentis = FQT. Source: Reuters Thomson Eikon and Carlsquare

### Valuation comparison, Frequentis peer group (base case)

	EV/Sales, 2021E	EV/EBIT, 2021E
CS Group SA	0,7x	12,5x
Indra Sistemas SA	0,5x	8,3x
Kapsch Trafficcom AG	0,6x	24,4x
Kongsberg Gruppen ASA	1,0x	12,2x
OHB SE	0,7x	14,6x
S&T AG	0,9x	14,7x
Saab AB	1,1x	13,3x
Secunet Security Networks AG	6,6x	40,4x
GFT Technologies SE	0,8x	13,0x
<b>Median</b>	<b>0,8x</b>	<b>13,3x</b>
Average	1,4x	17,0x
Max	6,6x	40,4x
Min	0,5x	8,3x

Implied valuation	Sales	EBIT
Used multiple	0,8x	13,3x
CSQ expectations, 2021	335	23
Implicit EV	267	299
Debt	-7	-7
Cash	59	58,2
Shareholder value	319	351
Outstanding shares	13,3	13,3
Implicit value per share (EUR)	24,0	26,4
<b>Justified value per share (EUR)</b>	<b>25,2</b>	
Implied EV/Sales, 2021	0,8x	
Implied EV/EBIT, 2021	12,6x	

Source: Carlsquare estimates

As shown in the table above, the multiple valuation method yields a motivated value per share of EUR 25,2.

In the Bull-case, the multiple valuation yields a motivated value per share of EUR 30.5 and in the Bear-scenario of EUR 19.9.

## Combined justified value for the Frequentis share

In the table below, we have weighted together two different valuation methods. There is a key comparison with the peer companies on EV/EBITDA and EV/Sales in 2020 (forecasts according to Consensus). To that we add our DCF-valuation of the Frequentis-share, where we also have presented our Bear- and Bull-case, respectively.

When it comes to EV/EBITDA, we have assumed that EBITDA will be 25 percent lower than our Base case scenario. We have multiplied this with our lowest EV/EBITDA-multiple in the peer group (save Secunet Security Networks and GFT Technologies). Similarly, we have assumed that EBITDA will be 25 percent higher in our Bull scenario compared to our Base case scenario. We have multiplied this EBITDA by the highest multiple in the peer group (save Secunet and GFT).

In the same manner, we have set Revenues per share 25 percent lower and higher in our Bear- and Bull-valuation scenarios. Then we have applied the same technique for choosing EV/Sales-multiples, i.e., the lowest in the peer group (save Secunet and GFT) for the Bear scenario and the highest for the Bull-scenario.

As can be seen in the table below, the weighted justified share value then varies from 17.0 Euro according to the Bear scenarios to 26.4 Euros if we go for the Bull-scenarios.

The share price potential compared to last paid (18.4 Euro) varies from minus 7 percent in the Bear scenario, to plus 19 percent according to our Base case scenario and plus 43 percent when using the Bull-scenario.

### Valuation comparison, Frequentis peer group

	Base	Bear	Bull
Multiple valuation	25,2	19,9	30,5
DCF-valuation	18,4	14,2	22,3
<b>Motivated value (EUR)</b>	<b>21,8</b>	<b>17,0</b>	<b>26,4</b>
Potential up-/downside	19%	-7%	43%
<b>Implied multiples</b>			
Implied EV/Sales, 2021E	0,71x	0,70x	0,72x
Implied EV/EBITDA, 2021E	10,59x	10,38x	10,65x

Source: Carlsquare estimates.

As shown, our motivated value in our base-case corresponds to a rebate against peers. One factor that could justify a certain discount in the Frequentis share is the presence of a golden share, which is held by the main owner family. The owner of this share is entitled to delegate one third of the maximum of shareholder representatives in the Company's Supervisory Board. But given a strong track-record for the company's operations for many years, we do not think this is any main valuation issue though it could be for some investors.

To sum up, in our Base case scenario we see a 19 percent share price potential from current last traded for the Frequentis share (18,4 Euro).

**Income statement, outcome and forecast (EURm)**

	2018	2019	2020E	2021E	2022E	2023E
Revenues	285,76	303,63	315,00	335,00	345,00	360,00
Own work capitalised	0,02	0,37	0,30	0,31	0,31	0,32
Other operating income	8,10	6,25	5,00	5,10	5,20	5,31
<b>Total revenues</b>	<b>293,88</b>	<b>310,26</b>	<b>320,30</b>	<b>340,41</b>	<b>350,51</b>	<b>365,62</b>
Cost of material and purchased services	-76,81	-81,60	-84,44	-89,74	-92,39	-96,36
Personnel expenses	-142,95	-154,81	-158,93	-167,93	-172,43	-179,18
Other operating expenses	-52,53	-43,67	-42,50	-45,60	-47,15	-49,48
Depreciation and amortisation	-5,99	-12,96	-14,00	-14,60	-14,91	-15,36
<b>EBIT</b>	<b>15,60</b>	<b>17,22</b>	<b>20,43</b>	<b>22,54</b>	<b>23,64</b>	<b>25,25</b>
Financial income	0,50	0,44	0,46	0,49	0,50	0,52
Financial costs	-0,43	-0,82	-0,70	-0,74	-0,77	-0,80
Other financial result	-0,01	0,00	-30,90	0,00	0,00	0,00
<b>Financial result</b>	<b>0,07</b>	<b>-0,38</b>	<b>-31,14</b>	<b>-0,26</b>	<b>-0,27</b>	<b>-0,28</b>
Earnings from invest. acc.for at Equity	0,24	0,15	0,00	0,00	0,00	0,00
<b>Profit before tax</b>	<b>15,91</b>	<b>16,98</b>	<b>-10,71</b>	<b>22,28</b>	<b>23,38</b>	<b>24,97</b>
Income Taxes	-4,08	-4,46	2,36	-5,57	-5,84	-6,24
<b>Profit after tax</b>	<b>11,83</b>	<b>12,52</b>	<b>-8,35</b>	<b>16,71</b>	<b>17,53</b>	<b>18,73</b>
Non-controlling interests	0,57	0,70	-0,43	0,87	0,91	0,97
Equity holders of the company	11,27	11,82	-7,92	15,84	16,62	17,75
Earnings per share	0,94	0,93	-0,60	1,19	1,25	1,34
No of shares	12,00	12,77	13,28	13,28	13,28	13,28
<b>Growth</b>	<b>2018</b>	<b>2019</b>	<b>2020E</b>	<b>2021E</b>	<b>2022E</b>	<b>2023E</b>
Revenues	7%	6%	4%	6%	3%	4%
Total revenues	7%	6%	3%	6%	3%	4%
EBITDA	8%	40%	14%	8%	4%	5%
EBIT	9%	10%	19%	10%	5%	7%
Profit before tax	11%	7%	n.m.	n.m.	5%	7%
Profit after tax	11%	6%	n.m.	n.m.	5%	7%
Earnings per share	14%	-1%	n.m.	n.m.	5%	7%
<b>Margins</b>	<b>2018</b>	<b>2019</b>	<b>2020E</b>	<b>2021E</b>	<b>2022E</b>	<b>2023E</b>
EBITDA-margin	8%	10%	11%	11%	11%	11%
EBIT-margin	5%	6%	6%	7%	7%	7%
PTP-margin	6%	6%	-3%	7%	7%	7%
Net profit-margin	4%	4%	-3%	5%	5%	5%

Source: Company information (2018-2019) and Carlsquare estimates (2020-2023).

**Balance sheet, outcome and forecast (EURm)**

	2 018	2019	2020E	2021E	2022E	2023E
<b>Tangible Assets</b>						
Property, plant and equipment	9,1	48,2	44,7	41,3	38,2	35,3
Intangible assets	8,7	9,8	9,1	8,3	7,6	7,0
Equity-related assets	1,2	1,6	1,6	1,6	1,6	1,6
Deferred tax assets	1,5	1,7	1,7	1,7	1,7	1,7
Other tangible assets	8,2	10,2	9,4	8,7	8,0	7,4
<b>Total Tangible Assets</b>	<b>28,8</b>	<b>71,5</b>	<b>66,5</b>	<b>61,6</b>	<b>57,2</b>	<b>53,0</b>
<b>Current assets</b>						
Inventories	13,1	13,8	15,8	17,9	20,1	22,4
Accounts receivables	86,9	99,5	104,5	109,7	115,2	121,0
Other current assets	23,6	20,5	20,5	20,5	20,5	20,5
Cash and cash equivalents	45,5	66,9	58,6	74,4	90,4	106,9
<b>Total current assets</b>	<b>169,2</b>	<b>200,6</b>	<b>199,3</b>	<b>222,5</b>	<b>246,2</b>	<b>270,8</b>
<b>Total assets</b>	<b>198,0</b>	<b>272,1</b>	<b>265,9</b>	<b>284,1</b>	<b>303,3</b>	<b>323,8</b>
<b>Equity</b>						
Share capital	12,0	13,2	13,3	13,3	13,3	13,3
Other equity	-0,3	19,7	19,7	19,7	19,7	19,7
Retained earnings	60,8	69,2	79,7	69,1	82,3	96,3
Result for the year	11,8	12,5	-7,9	15,8	16,6	17,8
Equity attributable to parent company	84,3	114,6	104,8	118,0	131,9	147,0
Non-controlling interest	1,3	1,6	1,1	2,0	2,9	3,9
<b>Total equity</b>	<b>85,6</b>	<b>116,2</b>	<b>105,9</b>	<b>120,0</b>	<b>134,9</b>	<b>150,9</b>
<b>Long term liabilities</b>						
Liabilities to bank and other financial	6,5	5,5	7,0	8,7	10,3	11,9
Provisions & other liabilities	17,7	16,7	17,0	17,2	17,4	17,7
Lease liabilities	0,0	32,8	33,2	33,7	34,2	34,7
Deferred tax liabilities	4,0	3,8	3,9	3,9	4,0	4,1
<b>Total long-term liabilities</b>	<b>28,1</b>	<b>58,9</b>	<b>61,1</b>	<b>63,5</b>	<b>65,9</b>	<b>68,3</b>
<b>Current liabilities</b>						
Liabilities to bank and other financial	1,7	1,6	2,1	2,6	3,0	3,5
Accounts payable	62,6	62,3	63,2	64,0	65,0	65,9
Lease liabilities	0,0	7,3	7,4	7,5	7,6	7,7
Other liabilities	18,8	24,7	25,0	25,4	25,8	26,1
Current tax liabilities	1,2	1,2	1,2	1,2	1,2	1,2
<b>Total current liabilities</b>	<b>84,2</b>	<b>97,1</b>	<b>98,8</b>	<b>100,7</b>	<b>102,6</b>	<b>104,5</b>
<b>Total liabilities</b>	<b>112,3</b>	<b>156,0</b>	<b>160,0</b>	<b>164,2</b>	<b>168,5</b>	<b>172,9</b>
<b>Total shareholders' equity and liabilities</b>	<b>198,0</b>	<b>272,1</b>	<b>265,9</b>	<b>284,1</b>	<b>303,3</b>	<b>323,8</b>
<b>Liquidity</b>						
Balance sheet liquidity	1,5	1,4	1,4	1,5	1,5	1,6
Liquidity ratio	2,0	2,1	2,0	2,2	2,4	2,6
Cash liquidity	0,5	0,7	0,6	0,7	0,9	1,0
<b>Solvency ratios</b>						
Net debt (-)/net cash (+)	39,9	61,4	52,7	67,9	83,3	99,3
Net cash/EBITDA	2,6x	3,6x	2,6x	3,0x	3,5x	3,9x
Net cash/Equity	0,5x	0,5x	0,5x	0,6x	0,6x	0,7x
Debt/Equity	10%	6%	9%	9%	10%	10%
Solvency ratio	43%	43%	40%	42%	44%	47%
<b>Profitability key ratios</b>						
Return on equity	13%	11%	-8%	14%	13%	12%
Return on total assets	8%	6%	8%	8%	8%	8%
Return on invested capital	10%	7%	-5%	9%	9%	9%

Source: Company information (2018-2019) and Carlsquare estimates (2020-2023).

**Cash Flow, outcome and forecast (EURm)**

	2018	2019	2020E	2021E	2022E	2023E
<b>Cash flow from operations</b>						
Profit after tax	11,9	11,7	-8,4	16,7	17,5	18,7
Depreciation and amortisation	6,0	13,0	14,0	14,6	14,9	15,4
Other adjustments	-5,6	3,9				
<b>Change in working capital</b>						
Change in inventories	-2,9	-0,7	-2,0	-2,1	-2,2	-2,3
Change in account receivables	-13,8	-10,0	-5,0	-5,3	-5,5	-5,8
Change in liabilities	9,0	-0,1	2,0	2,1	2,2	2,3
<b>Cash flow from operations</b>	<b>4,6</b>	<b>17,7</b>	<b>0,6</b>	<b>26,1</b>	<b>26,9</b>	<b>28,3</b>
<b>Investment activities</b>						
Acquisition of tangible assets	-4,7	-4,3	-9,0	-9,7	-10,4	-11,2
Acquisition of securities and equity instruments	0,3	-0,3	0,0	0,0	0,0	0,0
Investment in associated companies	0,0	0,0	0,0	0,0	0,0	0,0
<b>Cash flow from investing activities</b>	<b>-4,4</b>	<b>-4,6</b>	<b>-9,0</b>	<b>-9,7</b>	<b>-10,4</b>	<b>-11,2</b>
<b>Financial operations</b>						
New issue of shares	0,0	20,7	0,0	0,0	0,0	0,0
Change in net debt	0,7	-10,9	2,0	2,1	2,1	2,1
Other financing activities	0,0	0,1	0,0	0,0	0,0	0,0
Dividends	-14,9	-1,9	-2,0	-2,7	-2,7	-2,7
<b>Cash flow from financing activities</b>	<b>-14,2</b>	<b>8,0</b>	<b>0,0</b>	<b>-0,6</b>	<b>-0,6</b>	<b>-0,6</b>
<b>Cash flow for the period</b>	<b>-14,1</b>	<b>21,2</b>	<b>-8,3</b>	<b>15,8</b>	<b>15,9</b>	<b>16,5</b>
Cash at start of the period	77,7	45,5	66,9	58,6	74,4	90,4
Non-cash related change in cash	-18,0					
Other adjustments including translation effects	-0,1	0,2	0,1			
Cash at end of the period	45,5	66,9	58,6	74,4	90,4	106,9
<b>Key ratios</b>						
Cash flow operations/revenues	0,0x	0,1x	0,0x	0,1x	0,1x	0,1x
Cash flow operations/total assets	0,0x	0,1x	0,0x	0,1x	0,1x	0,1x
Dividend per share	0,00	0,15	0,20	0,20	0,20	0,20

Source: Company information (2018-2019) and Carlsquare estimates (2020-2025).

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