

# Biohit Oyj

## Initiation of coverage

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**Antti Siltanen**  
+358 45 119 6869  
antti.siltanen@inderes.fi

✓ Inderes corporate customer

This report is a summary translation of the report “xxx” published on 6/30/2023 at 6:59 pm

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# Sustainability of turnaround being tested

We initiate coverage of Biohit with an Accumulate recommendation and a target price of EUR 2.1. Biohit is focused on diagnostics of the gastrointestinal tract and health-promoting products. The company has shown the first signs of a turnaround after a long loss-making period. We feel a permanent turnaround of the result is likely thanks to new products, the renewed Chinese distribution agreement and effective implementation of the strategy. We believe that the development of new products and successful commercialization are key to the company's long-term success.

## Biotechnology company focused on diagnostics of the gastrointestinal tract

Biohit's product portfolio includes about ten diagnostic tests to determine the pathology behind gastrointestinal tract symptoms. The company's spearhead product is the GastroPanel® set of four tests that indicate stomach health. Biohit has recently introduced quick test versions of the product to the market that are expected to drive growth in the company's key markets in China, the UK, the EU and the Middle East. Diagnostic tests are supported by Acetium® products that bind toxic acetaldehyde in the stomach and oral mucosa.

## First signs of an earnings turnaround have been seen

Biohit has been mostly loss-making in the last decade but managed to turn its earnings positive last year. We also see possibilities for the company to achieve a more sustainable turnaround and reach profitable growth through new products, the renewed Chinese distribution agreement and effective implementation of the strategy. We believe that the company's strategy is currently heavily focused on improving and making the core business more efficient. A new strategy is to be published in the fall, which we expect will open the company's longer-term plans and targets. In the longer term, we believe it is key for the company to succeed in product development and in commercializing new products to renew its aging product portfolio.

## We expect healthy growth with new versions of GastroPanel® and the distribution agreement in China

In the short term, we believe business visibility is moderate, but quickly becomes blurred in the medium term. We expect slightly under 10% CAGR growth in 2023-2025, supported by the sale of new GastroPanel® quick tests and the renewed Chinese distribution agreement. We expect the operating result to nearly double from the current level to EUR 2.1 million by 2025. Our earnings estimate is based on net sales growth and improved operational efficiency. With a very strong balance sheet and positive cash flow estimates, we expect an annual dividend yield of about 3% from 2024 onwards, although the company has not announced any plans to pay dividends.

## Valuation seems moderately attractive

The share's EV/EBIT ratios for 2023 and 2024 are 17x and 13x. The multiples will continue to fall rapidly with the estimates for the coming years. The multiples are moderate compared to the multiples of the peers and the long-term profitability potential we expect. Examined with the revenue-based EV/S multiple, the share is still cheap considering its history and the peer group. The DCF model also indicates a moderate upside in the share. We believe the risk level of the share is relatively high (level 3) due to the small size of the company, the estimate risk and the uncertainty about the sustainability of the turnaround. On the other hand, a very strong balance sheet, a defensive industry and, in our opinion, moderate pricing limit the investor's risk.

## Recommendation

**Accumulate**

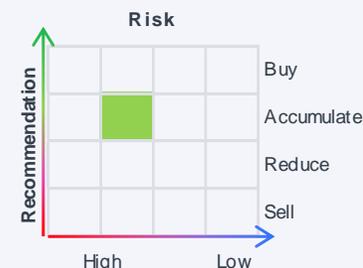
(previous -)

**EUR 2.10**

(previous -)

**Share price:**

1.78



## Key figures

	2022	2023e	2024e	2025e
<b>Revenue</b>	11.0	11.3	12.6	13.9
<b>growth-%</b>	17%	3%	11%	11%
<b>EBIT adj.</b>	1.1	1.2	1.6	2.1
<b>EBIT-% adj.</b>	10.3 %	10.9 %	12.4 %	15.1 %
<b>Net Income</b>	0.6	1.0	1.4	1.7
<b>EPS (adj.)</b>	0.04	0.07	0.09	0.11

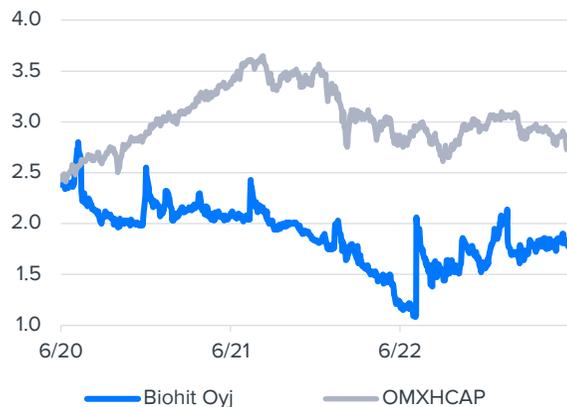
<b>P/E (adj.)</b>	39.3	25.9	19.5	15.9
<b>P/B</b>	3.1	3.1	2.7	2.5
<b>Dividend yield-%</b>	0.0 %	0.0 %	2.8 %	3.4 %
<b>EV/EBIT (adj.)</b>	16.3	16.9	12.7	9.3
<b>EV/EBITDA</b>	11.4	12.0	9.6	7.6
<b>EV/S</b>	1.7	1.8	1.6	1.4

Source: Inderes

## Guidance

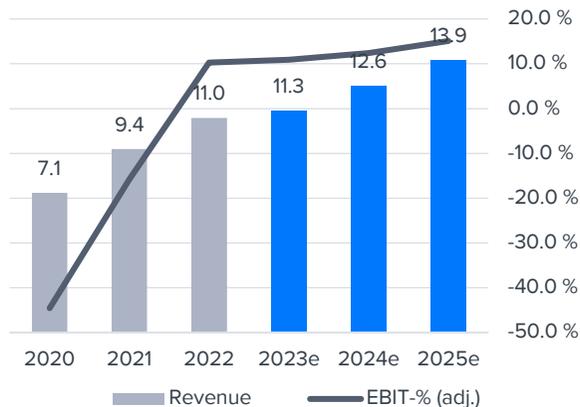
Biohit expects EBIT to increase in 2023 compared to 2022 (EUR 1.1 million in 2022).

## Share price



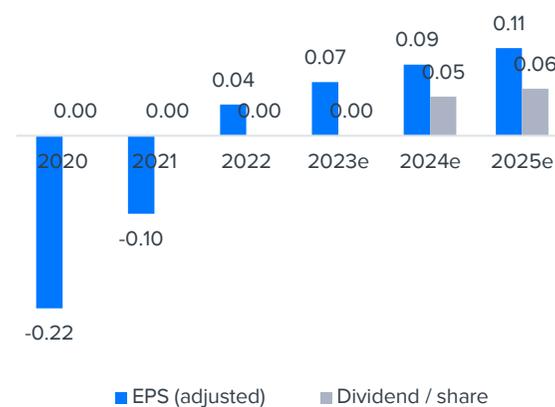
Source: Millistream Market Data AB

## Revenue and EBIT-%



Source: Inderes

## EPS and dividend



Source: Inderes



## Value drivers

- Growth in new GastroPanel® products
- Increased operational efficiency
- Renewed distribution agreement in China
- Using the strong balance sheet to pay dividends or to create opportunities for inorganic growth



## Risk factors

- Dependency on the Chinese market
- Small resources relative to competitors
- Failure in developing new products
- The aging of the current product portfolio and its loss of competitiveness
- Poor visibility of estimates

Valuation	2023e	2024e	2025e
Share price	1.78	1.78	1.78
Number of shares, millions	15.0	15.0	15.0
Market cap	27	27	27
EV	21	20	20
P/E (adj.)	25.9	19.5	15.9
P/E	25.9	19.5	15.9
P/FCF	47.2	29.8	22.9
P/B	3.1	2.7	2.5
P/S	2.4	2.1	1.9
EV/Sales	1.8	1.6	1.4
EV/EBITDA	12.0	9.6	7.6
EV/EBIT (adj.)	16.9	12.7	9.3
Payout ratio (%)	0.0 %	55.1 %	53.6 %
Dividend yield-%	0.0 %	2.8 %	3.4 %

Source: Inderes

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# Biohit in brief

Biohit is a Finnish health technology company that develops diagnostic and health-promoting products for the international market.

## 1988

Year of establishment

## 1999

IPO

## 11.0 MEUR (+17% vs. 2021)

Net sales 2022

## 97.9%

Share of international net sales 2022

## 1.1 MEUR (9.3% of net sales)

EBIT 2022

## 68.3%

Equity ratio 2022

## +4.6% 2022-2030

Average growth in the diagnostic market for the gastrointestinal tract

### 1988-2011

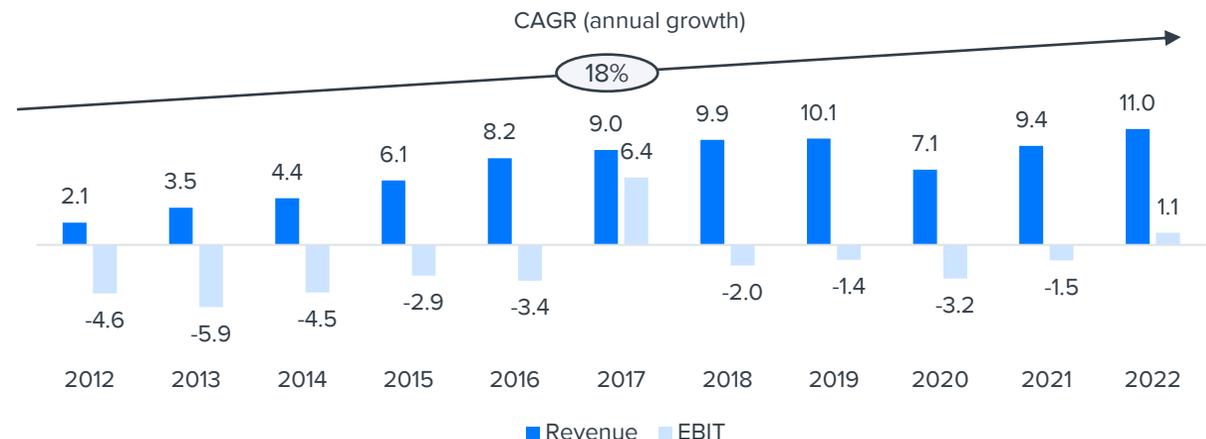
- 1988 the company is founded
- In the 1990s the company develops and commercializes pipettes
- 1999 IPO
- 2001 the GastroPanel® test is introduced for research use
- 2004 FDA- approval for the Helicobacter blood test that is part of GastroPanel®
- 2005 GastroPanel® is introduced to the market
- 2010 launch of the Acetium® capsule
- 2011 the pipette business is divested, resulting in net sales decreasing from EUR 40 million to EUR 2 million

### 2012-2019

- 2013 joint venture in China: Biohit Healthcare (Hefei) Co. Ltd.
- 2013 subsidiary in Italy
- 2016 production of GastroPanel® products begins in China
- 2016-17 Acetium® studies related to smoking cessation are completed
- 2017 sales of the Acetium lozenge to help quit smoking begins
- 2017 profitable financial year due to exit from the joint venture in China
- 2018 Biohit Healthcare (Hefei) buys a 33% share of Biohit

### 2020-2023

- 2020 the effects of the pandemic reduce Biohit's net sales
- 2021 GastroPanel® quick test from venous blood is launched
- 2022 GastroPanel® quick test from fingerprick blood samples is launched
- 2021-2022 the company undergoes several management changes
- 2022-2023 expansion of distribution network
- 2021-2023 the strategy focuses on strengthening the foundation of the business
- 2023 a new strategy is being prepared for the fall



# Company description

## From pipettes to diagnostics business

Biohit is a Finnish health technology company focusing on diagnostic products and diagnostic analysis systems for the gastrointestinal tract, as well as health-promoting products. The company was founded in 1988 and during its first years it developed and commercialized pipettes. The company grew and internationalized with the help of pipettes in the 1990s and started developing the diagnostics business supported by the profitable growth of the pipettes. Biohit was listed in 1998, when its net sales were around EUR 17 million (FIM ~100 million).

The company divested its pipette business in 2011 and has since focused on the diagnostics business. Selling the pipette business changed the company's profile substantially. Biohit's net sales were about EUR 40 million and the business was profitable. After the divestment, the company stayed in the diagnostics business, whose net sales was about EUR 2 million and the business was clearly loss-making. Since then, the company has increased its net sales to EUR 11 million (2022) and managed to turn the result profitable. Most of the company's net sales, over 97%, comes from outside Finland. Biohit's key products are the GastroPanel® stomach health test launched in 2005 and acetaldehyde binding Acetium® products that were introduced in 2010 and 2017.

GastroPanel® is a set of four diagnostic tests carried out from blood samples to identify *Helicobacter pylori* infections, atrophy of the stomach mucosa and

acid-free stomach. The test can also be used to assess the risk of malabsorption of vitamin B12 and other trace elements.

The Acetium® capsule that binds acetaldehyde, a compound that increases cancer risk, can be used to bind acetaldehyde from alcohol and food and generated by microbes, thus reducing the risk of cancer. The capsule was introduced in 2010. The Acetium® lozenge, introduced in 2017, can be used to help stop smoking. The lozenge's active ingredient binds acetaldehyde released into saliva from tobacco smoke that causes addiction and reduces the pleasure of smoking.

Since divesting the pipette business, Biohit has mostly been heavily loss-making but managed to turn the result into the black in 2022. We see Biohit as a growing turnaround company and examples of the turnaround have now been seen. We feel that developing the basics of the business are emphasized in the company's current strategy and management's comments, which seems to be behind the witnessed earnings turnaround. On the other hand, the company's long-term objectives and plans are still somewhat unclear. Biohit is currently preparing a new strategy to be published in fall 2023. With the new strategy, we expect an improved view of the company's longer-term growth plans and outlook.

## Biohit Group

**Subsidiary in Italy**  
*Biohit Healthcare Srl*

**Subsidiary in the UK**  
*Biohit Healthcare Ltd*

## Investments

### Genetic Analysis SA

Biohit owns 5.7% of a Norwegian listed company focusing on gut microbiota analysis

### Biohit Healthcare (Hefei) Co Ltd

Former Chinese joint venture, from which Biohit exited in 2017 and that currently owns 33% of Biohit

Source: Biohit, Inderes

## Revenue and EBIT, MEUR



# Business model 1/6

## Biohit focuses on diagnostics of the gastrointestinal tract

Biohit develops its gastrointestinal tract diagnostic tests mainly itself and uses external services to support development. In addition to own manufacturing, the company also has outsourced production. A key player especially in GastroPanel® manufacturing is the company's Chinese partner Biohit Healthcare Co Ltd (Hefei). Biohit's product portfolio currently consists of about 10 diagnostic tests, two products that bind acetaldehyde, and monoclonal antibodies for research use. The product portfolio is summarized in the graph on the next page. The company's key commercial products are the GastroPanel® test with different versions and the products that bind acetaldehyde, which are described in more detail below.

## GastroPanel® - a set of four health tests for diagnosing upper abdominal problems

GastroPanel® is a set of four diagnostic tests from a blood sample to determine whether the stomach mucosa is healthy or not. The test also indicates Helicobacter infection, which is a key cause of gastric ulcer and atrophy of the stomach mucosa. The results can be used to assess whether the patient is at risk of gastric cancer or peptic ulcers or have a risk of vitamin B12, calcium or iron deficiency. The test is primarily used as a screening tool to identify patients requiring further examination. This test can help avoid unnecessary gastric endoscopies that are expensive and unpleasant for patients. There is both an Enzyme-Linked ImmunoSorbent Assay, i.e. an

ELISA test and a quick test that can be performed on both a venous blood sample (2021 CE marking) and blood taken from the fingertip (2022 CE marking). The quick test gives a result in just 15-20 minutes. In addition to the immunological test, the quick test system consists of a separate GP Reader device that analyzes the result. The ELISA test, in turn, is a traditional and widely used analysis method in diagnostics, the results of which are typically obtained within hours.

GastroPanel® is suitable for diagnosing atrophic gastritis (i.e. dysfunction and atrophy of the stomach mucosa) and Helicobacter infection, and for assessing the risk of gastric and duodenal cancer and gastroesophageal reflux disease. The test measures the concentration of four markers: Helicobacter pylori IgG antibodies, Gastrin-17, Pepsinogen I and Pepsinogen II in blood. The results of the four makers are interpreted together, which, according to the company, gives a more reliable and extensive view of the structure and function of the stomach mucosa compared to analyzing the concentration of a single marker. The GastroPanel® end product is a report that describes the result and classifies it into one of five diagnostic options: 1) normal healthy stomach, 2) helicobacter infection, 3) atrophic antrumgastritis, 4) atrophic corpusgastritis and 5) atrophic pangastritis. Further measures include helicobacter eradication treatment with antibiotics or a referral to a gastric endoscopy.

## Determinations of the GastroPanel® test

<b>Helicobacter pylori antibodies</b>	H pylori infection increases the risk of developing a duodenal or gastric ulcer. It causes dysfunction and atrophy of the stomach mucosa in some people (atrophic gastritis). AG exposes to gastric and esophageal cancer, as well as malabsorption.
<b>Pepsinogen I</b>	Pepsinogen I concentration in blood reflects the structure and function of the mucosa in the gastric body (corpus). Atrophy of the corpus, leading to a decrease in the concentration of pepsinogen I.
<b>Pepsinogen II</b>	Pepsinogen II concentration in blood reflects the structure and function of whole stomach mucosa. Its concentration in blood circulation increases in the case of stomach mucosal inflammation (gastritis). The Pepsinogen I/II ratio is used to diagnose the severity of atrophy of the corpus.
<b>Gastrin-17</b>	The Gastrin-17 concentration in blood reflects the integrity and function of the lower part of the stomach (the antrum). Low Gastrin-17 levels in blood during fasting may therefore indicate either an increased secretion of hydrochloric acid or antrum mucosal atrophy.
<b>Examples of test result options</b>	Healthy stomach; Healthy stomach with reduced acid secretion; Gastritis caused by Helicobacter; Atrophic corpus gastritis Atrophic antrumgastritis Atrophic pangastritis (corpus and antrum)

Source: Biohit, Inderes

# Business model 2/6 - Biohit's products

Product family	Products			Description
<b>Diagnostics-ELISA<sup>1</sup></b>	GastroPanel®-ELISA	Calprotectin-ELISA	Vitamin D ELISA	Biohit develops, manufactures and markets test kits based on enzyme-linked immunosorbent assay (ELISA) for disease diagnostics and research use. ELISA is a conventional and widely used method for diagnostics. The tests focus on the gastrointestinal tract.
	Active Vitamin B12 ELISA			
<b>Diagnostic quick tests</b>	GastroPanel® quick test	Celiac disease quick test	Lactose intolerance quick test	Next to ELISA tests Biohit sells quick tests, such as the GastroPanel® test from fingertip blood samples. Quick tests give fast results and can be carried out close to the patient in small units, e.g., when no clinical laboratory analysis service is available or when the number of samples to be analyzed is low.
	ColonView® quick test	Helicobacter pylori UFT300 quick test	Helicobacter pylori quick test	
<b>Acetaldehyde binding products</b>	Acetium® capsule	Acetium® lozenge		Acetaldehyde is a carcinogenic compound produced by increased oral microbes from alcohol and dietary sugars in an acid-free stomach. It is also released into saliva from tobacco smoke. The Acetium® capsule binds acetaldehyde in the stomach and the lozenge in saliva. The products are sold to consumers without prescription, e.g., in pharmacies.
<b>Monoclonal antibodies</b>	Several antibodies for research use			Biohit produces and sells monoclonal antibodies. They are used in research applications, e.g., to stain desired structures in tissue samples. We estimate that antibodies are profitable for Biohit but a small-scale business.
<b>Dysbiosis</b>	GA-Map dysbiosis test			The test identifies and characterizes intestinal imbalance, i.e. dysbiosis, from a fecal sample based on gut microbiota DNA. The product has been commercialized in cooperation with Norwegian Genetic Analysis AS that developed it.

1) Enzyme-Linked Immunosorbent Assay ELISA  
Source: Biohit / Inderes

# Business model 3/6

## Acetaldehyde binding products: Acetium® capsule and lozenge

Acetaldehyde is a molecule that predisposes to cancer found in certain foods and alcoholic beverages such as Calvados. Acetaldehyde is formed as a metabolite of alcohol but also by microbial metabolism of sugars especially in a stomach with reduced acid secretion. According to the company, acetaldehyde is annually linked to the development of some 4 million cancer cases.

Biohit has developed and commercialized two acetaldehyde-binding Acetium® products to reduce its harmful effects in the gastrointestinal tract and in the mouth caused by tobacco smoke. The active ingredient in Acetium® products is L-cysteine and it also contains other substances that affect the release of L-cysteine.

The **Acetium® capsule** is designed to reduce the amount of acetaldehyde in an acid-free stomach. The product has been on the market since 2010. Biohit recommends the capsule for persons with an acid-free stomach, chronic Helicobacter infection or those who use medication reducing acid production (proton pump inhibitors). In Finland, around 100,000 people suffer from atrophic gastritis or acid-free stomach caused by Helicobacter infection, i.e. about 1.8% of the population. In addition, about 500,000 Finns use medication reducing acid production (proton pump inhibitors). The Acetium® capsule is available in pharmacies without prescription. In addition to reducing the risk of cancer, the product can apparently also be used to alleviate nausea

following heavy alcohol consumption. Globally, the company estimates that the number of people suffering from acid-free stomach is about 700 million.

According to the company, the groups most likely to benefit from the product are: 1) atrophic gastritis caused by Helicobacter infection; 2) autoimmune-based atrophic gastritis; 3) smokers; 4) those who consume alcohol regularly; 5) long-term users of PPI medication (proton pump inhibitors reducing stomach acid secretion); and 6) all estimated 500 million people in Asia with a mutation in the aldehyde dehydrogenase (ALDH2) enzyme that are unable to convert acetaldehyde into acetic acid and are therefore exposed to high local acetaldehyde concentrations.

The **Acetium® lozenge** was brought to market in 2017 and, according to the company, the L-cysteine it contains binds about 90% of acetaldehyde released into saliva from tobacco smoke. The lozenge reduces the pleasure of smoking over time. According to research, this will increase the likelihood of smoking cessation. The lozenge does not contain nicotine or other addictive or harmful substances. The product is typically used for a few months. As far as we know, the lozenge is the only product of its kind. On the other hand, it is competing against other products that help reduce smoking such as Johnson & Johnson's Nicorette products.

## GastroPanel® quick test NT



Image: Biohit

## Acetium® lozenge



Image: Biohit

# Business model 4/6

According to our information, there are also competing L-cysteine products on the market, such as Catapult Cat, which are used to counteract the harmful effects of alcohol. We take a closer look at the competitive situation in the Industry and competitive field section.

## Development of new products is key for the future

Biohit aims to develop, expand and renew the diagnostic test package through research and development. Development is supported by the company's scientific advisory board. Key new product innovations in recent years have been the quick test product versions of GastroPanel® that utilize venous and fingertip blood samples that received CE markings in 2021 and 2022. The company's test portfolio is currently somewhat aged, as the commercialization of several tests started in the first decade of the 2000s. The Calprotectin, B12 and vitamin D tests and the Acetium® lozenge have been launched as newer products in 2014-2017.

We feel that success in product development and commercialization of new products is one of the key areas for Biohit's long-term success. Currently, the visibility of the company's product development pipeline is rather limited, as the company has not opened its product development pipeline to investors due to competitive reasons. It is, therefore, impossible to assess the timing or market potential of new products at this stage. We believe that Biohit will continue to focus on gastrointestinal tract diagnostics in product development, which would help the company to be even more clearly profiled in its own area of strength.

## Geographical focus is on Europe and Asia through distributors

Biohit's main markets are Europe, Great Britain, China and the Middle East. In Great Britain and Italy Biohit operates through subsidiaries. The sale of the company's products is mainly based on the use of distributors and product licensing. At least for the time being, the company has no own direct sales, excluding the subsidiaries. In 2022, Europe (excl. Finland) accounted for 42% of net sales and Asia Pacific for 43%, where China is clearly the key market for the company. Net sales in Finland, North and South America was less than 5% combined and 10% in other countries.

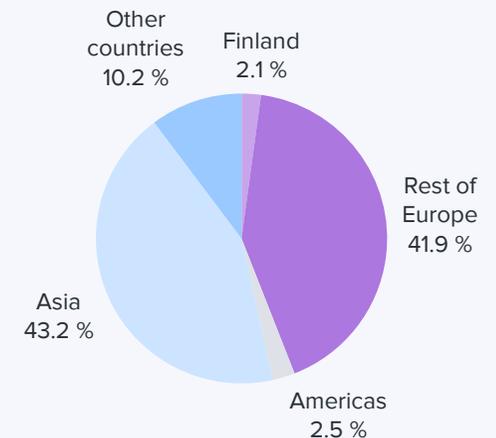
The company's most important single distributor is Biohit Healthcare (Hefei) Co. Ltd., a joint venture established by Biohit and Liu Feng in 2013, which handles distribution in China. Biohit sold its share in the joint venture in 2017. In 2018, Hefei acquired a share in Biohit and is, according to the 2022 financial statements, the largest owner of Biohit with a 32.9% holding. In the past, the companies have disagreed on how the patent license agreement related to the distribution cooperation should be applied. Biohit and Hefei signed a renewed long-term distribution agreement for certain GastroPanel® products in early 2022, at which time we believe the disagreements were resolved. We assess that the cooperation with Hefei will generate significant growth opportunities for Biohit in China. On the other hand, strong dependence on a single distributor also concentrates the related risks.

## Key product launches

Year	Product
2022	GastroPanel® fingertip blood test
2021	GastroPanel® venous blood test
2017	Acetium® lozenge
2016	GA-Map dysbiosis test
2015	Vitamin D test
2014	Calprotectin test
2014	Active vitamin B12 test
2010	Acetium® capsule
2008	Colonelview® quick test
2007	Gastroview® test
2005	GastroPanel® test

Source: Biohit, Inderes

## Geographical distribution of revenue



Source: Biohit, Inderes

# Business model 5/6

Biohit says it is building a committed and concentrated distributor and partner network and actively seeking new potential distributors. The company aims to reach new agreements with diagnostic product distributors, especially among distributors specialized in gastroenterology. We estimate that distributors' margins are around 40% of the selling price, which is typical for the industry.

The sales strategy based on distributors and licensing is capital-light for Biohit and does not according to our assessment require significant investments or increasing the cost structure. The model also allows seeking growth at a relatively low risk. We feel this is the right approach for Biohit compared to building its own sales organization to a significantly larger size than currently, which would require a heavier cost structure and would, on the other hand, bring higher profitability potential with the risks it entails.

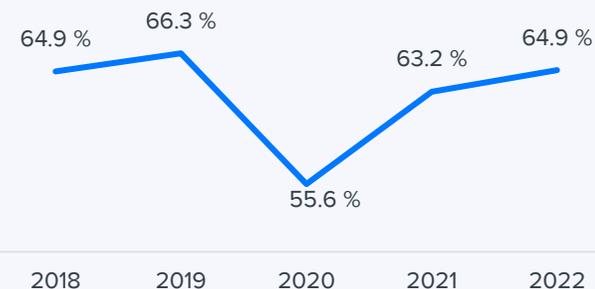
Biohit's strategic objective is to grow by expanding the distribution network of its core products. A recent example of distribution expansion and licensing is the agreement with the large British health technology company Randox. Randox has started to sell a test based on GastroPanel® under its own Randox Multiplex Gastrointestinal Panel product name. Other examples of recent distribution expansions are the three distribution agreements signed last year, which extend the market for Biohit's products to Poland, Singapore and Peru. For the Acetium® lozenge, a significant step was the launch by Gebro Pharma in Switzerland in 2022.

## Net sales are defensive

According to our estimates, Biohit's net sales are relatively recurring in nature once the company gets people to use the products. If customers have confidence in the functionality and ease of use of the products, we believe they will happily continue to use them. In the longer term, recurring net sales are challenged by possible competition from new products, to which the company has to respond by developing new and better products or product versions. New GastroPanel® versions have been evidence of such development. On the other hand, the product portfolio as a whole is rather old, so we think there is need for a stable stream of new product launches.

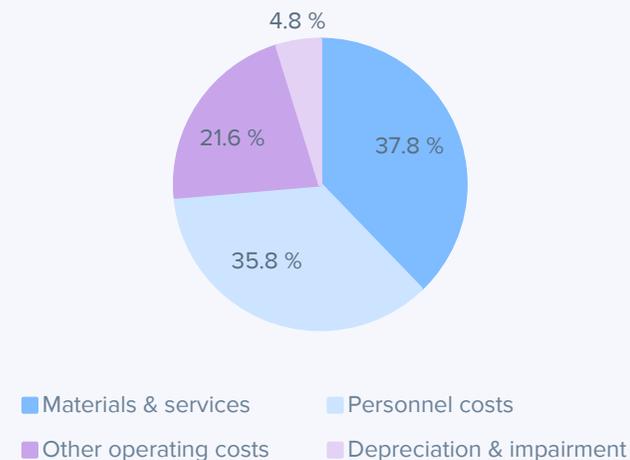
We also feel net sales are relatively independent of economic cycles, although the COVID pandemic caused extensive diagnostics resources to be directed to COVID testing. This had a clear negative impact on the demand for Biohit's products in 2020-2021. On the other hand, the pandemic normalized, e.g., at-home testing, which in the longer term can benefit companies that develop quick tests. We estimate that Biohit's net sales are somewhat concentrated, as China's share as the largest market and the company's dependence on its partner owner Hefei creates both growth opportunities and risks.

## Sales margin-%



Source: Biohit, Inderes

## Cost structure 2022, % of total costs



Source: Biohit, Inderes

# Business model 6/6

We believe Acetium® products differ from diagnostic tests in terms of net sales continuity. As lozenges are used to stop smoking for a short period, we estimate that maintaining the demand for the product will require continuous marketing efforts to consumers.

## Sales margin and scalability create profitability potential

Biohit's sales margin has been stable at around 65% in recent years, except for the COVID year 2020. We believe material costs are low compared to the final price of the product. The company has reported that its fixed costs are relatively high compared to current net sales. This is mainly due to R&D costs and the strict authority regulation of diagnostics, which Biohit has to spend extensive resources on. On the other hand, fixed costs will scale as the company's net sales increase, so Biohit should have good preconditions to increase its earnings faster than net sales in coming years.

## The business ties up little capital

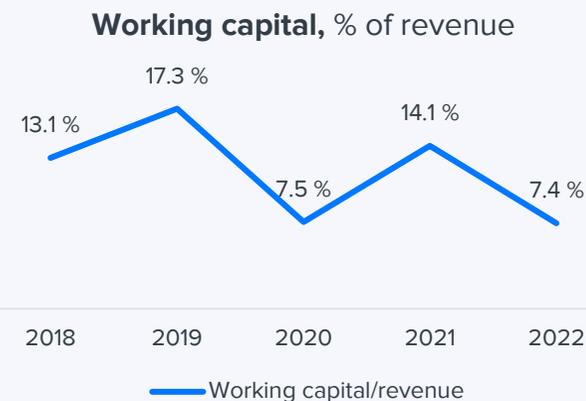
Biohit's working capital relative to net sales has been on a downward trend in recent years. We estimate that the 7.4% decrease in working capital in 2022 reflects the company's improved processes and is an indicator of the level for the next few years.

We believe that Biohit's investment needs are small. We believe that the company is effectively utilizing outsourcing in production. Thus, we do not expect that net sales growth requires substantial

investments in new premises or production equipment. The wide use of distributors in sales channels is also a very capital-light solution. In the case of recruitment, we do not see any immediate pressure to increase staff quickly. In the longer term, we believe that the company would benefit from strengthening sales and product development through recruitment. However, we believe that the company's strict cost control seen in recent years will continue in the near future and recruitment will remain low for the time being.

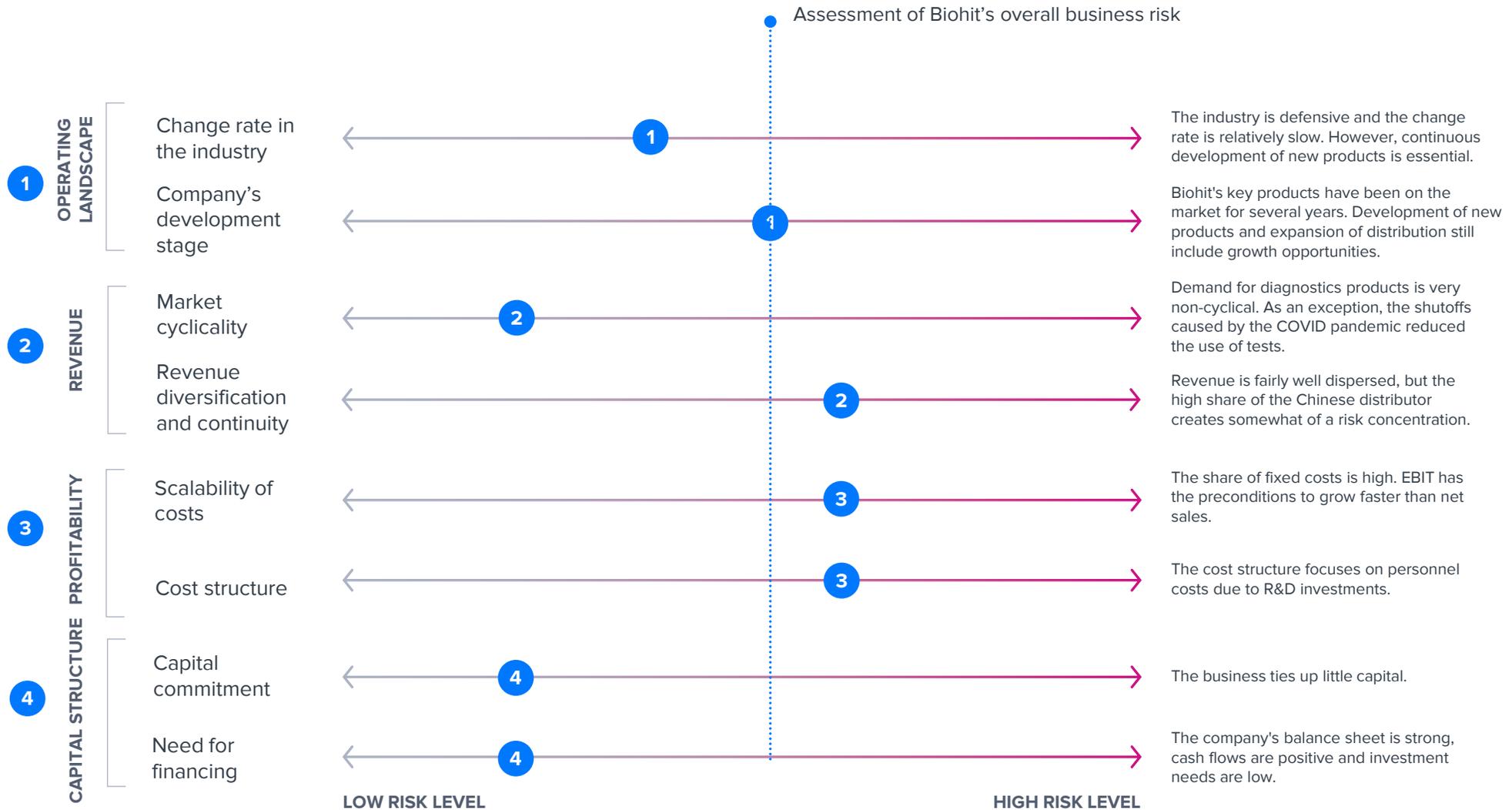
## Decision power in the company is concentrated

We believe investors should be aware of Biohit's concentrated ownership structure. The company founder Professor Osmo Suovaniemi owns 13.4% of the company's A shares, which corresponds to 56.4% of votes. Thus, voting majority in the company is concentrated on one owner.



Source: Biohit, Inderes

# Risk profile of the business model



# Investment profile

1. **Diagnostics company executing an earnings turnaround**
2. **Defensive and large market**
3. **Potential for scalable growth in the coming years**
4. **Future estimates and the success of the earnings turnaround involve uncertainty**
5. **A strong balance sheet and cash flows provide leeway**

## Potential



- The large market offers room and opportunities for growth
- The new GastroPanel® quick tests work as growth spearheads
- Possibility to further improve operational performance
- Possibility to increase EBIT faster than net sales in the coming years
- Net sales are defensive by nature and customer retention is at a good level

## Risks



- The company's resources are small compared to its competitors
- Success is required in product development to build future growth as the current product portfolio is relatively old
- Visibility into the future is relatively poor
- Dependency on the Chinese market

# Industry and competitive field 1/4

## Biohit operates in the diagnostic market for the gastrointestinal tract

The total market for *in vitro* diagnostics was about USD 116 billion in 2022 and is expected to grow by 4.6% over the next few years<sup>1</sup>. For Biohit, the relevant share of this overall test market is, in our opinion, **the diagnostics of the gastrointestinal tract**. Except for Acetium<sup>®</sup> products, Biohit's products are placed in this market, which we believe to also represent Biohit's future product development. The market size in 2021 was USD 4.6 billion and it is expected to grow at an annual rate of 4.6% (CAGR) until 2030, when it is estimated to be USD 6.9 billion. Geographically, the largest area is the United States with a share of about 40%.

The driving force for overall market growth is the aging of the population and the increasing prevalence of gastric cancer and gastritis. So-called point-of-care testing, POC is expected to become more common, which refers to diagnostics outside clinical laboratories. An example is the family doctors common in Central Europe who operate in small units and who are not supported by a health center system like in Finland that offers large-scale diagnostics services and testing. Growth is also driven by the need for advanced molecular technologies, new applications as a result of new product launches, and the need to control the growth of health care costs through producing timely diagnostic data.

Among Biohit's products, the GastroPanel<sup>®</sup> fingertip blood sample version next to other quick tests fits the

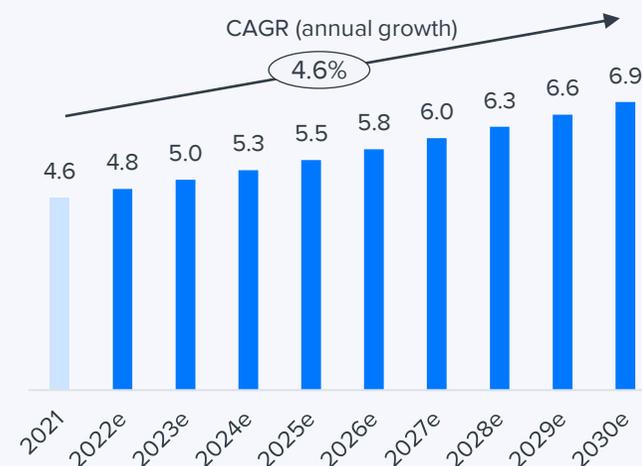
POC trend, while the ELISA tests are better suited for larger central laboratories.

**Market for Acetium<sup>®</sup> products.** The Acetium<sup>®</sup> lozenge is, in our view, placed in the market for smoking cessation products. This market was USD 20 billion in 2021 and it is estimated to grow to USD 55 billion by 2031 (CAGR growth 10.6%)<sup>3</sup>. The largest segment in this market are e-cigarettes and fastest growing nicotine replacement products like Nicorette<sup>®</sup>. We believe Biohit's main focus area is diagnostics, which we will focus on in more detail in this segment.

## Competitive factors of the diagnostics market

We believe the main competitive factors in the diagnostics market are related to product quality, security of supply and, to some extent, also the brand. Key for diagnostic tests is their sensitivity and specificity. Sensitivity refers to the test's ability to correctly identify the disease, i.e. the proportion of patients with a disease who receive a positive test result. Specificity refers to the test's ability to identify the absence of disease, i.e. the proportion of patients with a negative test result and no disease. The sensitivity and specificity of the test are analyzed in studies and we expect that data about the quality of the test is a key driver of customers' decision-making when selecting a test.

## Market<sup>1</sup> growth, USD bn



Source: Markets and Markets

## Market trends



Aging of the population



POC testing becoming more common



Managing health care costs



Development and launch of new technologies and tests



Increasing prevalence of gastric cancer and gastritis

Source: Grand View Research, Inderes

- 1) Markets and Markets
- 2) Grand View Research
- 3) Allied Market Research

# Industry and competitive field 2/4

The market for diagnostic tests is characterized by its defensiveness. When a particular test reaches a strong position among users its use typically continues for a long time. In addition to new competing products, the uncertainty about the availability of products may, according to our estimates, be a key reason for switching a particular test for another. Therefore, we stress the importance of security of supply as a competitive factor.

We believe that the diagnostics market is somewhat price sensitive. We suspect that a test can be priced higher than the competitors if the product is proven to be better in terms of, e.g., sensitivity, specificity, usability, or the time required to use the test, etc. However, we believe the market for diagnostic tests is relatively competed and there are often similar alternatives to the products, which highlights the importance of the price as a competitive factor. We also expect that brands are important in the diagnostics market and that well-known brands and/or companies have an advantage over small brands and companies that are just starting out.

## Competitors and competitive landscape

Several large global companies are active in the clinical diagnostics area, including Abbott Laboratories, bioMérieux, Bio-Rad Laboratories, Roche, Siemens Healthineers and Sysmex. The diagnostics net sales of these giants are typically in the billions. However, these companies are usually not focused on gastrointestinal tract diagnostics, but typical focus areas are, e.g.,

different infections (like COVID), cancers and STD testing. However, according to our information, large companies like Siemens Healthineers have tests for individual markers included in GastroPanel®. Large companies are able to offer such specifications at a very competitive price, but our information suggests that they do not offer a test set similar to GastroPanel® and extensive result interpretation including reports.

The most important competitors we have identified are SD Biosensors that recently acquired Meridian Biosciences. SD and Meridian have both a conventional H pylori test and a BreathID platform that enables measuring a H pylori infection from exhaling in their portfolio. The Meridian Curion platform is currently used to identify Helicobacter and Campylobacter infections and the aim is to extend it to other gastrointestinal tract tests as well. The two companies are a few of the payers we have identified where the gastrointestinal tract is clearly one of the key focus areas. In particular, Meridian's future plans to expand the Curion platform make it clear direct competitor to Biohit in our opinion. However, the company's approaches differ in terms of both the product and measuring technology, so we believe that Biohit still has clear differentiation factors. Meridian also appears to be more focused on infections of the gastrointestinal tract than Biohit. Other examples of Biohit's competitors and competing products are described on the following page.

## Biohit's competitive factors

As a company, Biohit's competitive factors include, in our view, a clear focus on gastrointestinal tract diagnostics, although the Acetium® lozenge as a single product is to some extent outside this focus area. Our assessment is that the focus helps the company build a trusted brand for its customers and helps profiling toward distributors. The strength and maintenance of this competitive factor is, in our opinion, crucially dependent on the company's ability to carry out successful product development and commercialize new products and product versions.

We believe that visibility into the company's product development capability is currently relatively low. Biohit has recently launched the GastroPanel® venous blood test (CE marking 2021) and the fingertip blood test (CE marking 2022). Otherwise, the product portfolio is, however, rather old. We feel the company seems very confident about the future of product development and that the focus of its R&D investments is correct. It is, however, hard to assess this from the outside so the investor has to rely to a large extent on the management's view when assessing the company's R&D capability.

# Industry and competitive field 3/4 – competitors in gastrointestinal tract diagnostics

Company 	Product 	Technology 
	VIDAS® H. pylori IgG	The quick test determines Helicobacter pylori IgG antibodies from blood serum or plasma in about 40 minutes.
	Breath ID® HP	H pylori test measured from exhaled breath.
	Curian®	Fluorescent immunoassay platform that can currently determine H pylori and Campylobacter infections. New gastrointestinal tract tests are to be introduced to the platform.
	QIAstat-Dx® Gastrointestinal Panel	A qualitative test for analyzing viral, bacterial, and parasite enteropathogens in fecal samples from patients suspected of having gastrointestinal tract infections.
	LIAISON® H pylori	H. pylori IgG test for chemiluminescence immunoassay (CLIA) in a serum sample. The Liaison test platform also enables determining H pylori and Campylobacter in fecal samples.
	Immulite® 2000 Gastrin	The Immulite 2000 Gastrin assay is an example of an inexpensive marker assay competing with GastroPanel®. As far as we know, the competitors do not, however, offer a similar set of 4 tests with interpretations.
	Flurecare PGI/PGII	PGI/ PGII Fluorescent immunoassay test for determining the Pepsinogen I/II ratio.
	Anti-Tissue Transglutaminase EIA	Example of assays competing against Biohit's smaller products. The test is used to determine markers. of celiac disease.

Source: Inderes

# Industry and competitive field 4/4

The GastroPanel® product has been on the market since 2005 and in research use since 2001. We estimate that the product has achieved a certain level of recognition as a brand, which will help both the sale of ELISA tests and, in particular, the future sale of the fingerprick tests. We believe GastroPanel's® 4 subtests are available from competitors as individual tests and possibly at a lower price. So GastroPanel® is exposed to competition from that direction. However, Biohit's competitive factor in addition to the brand, is also the unique 4-test package including software that streamlines the interpretation of the test package and the conclusions for the end user based on the test results.

In our view, the strength of the GastroPanel® is primarily the easy-to-use general test for mapping stomach health. However, there is some discrepancy on the functionality of GastroPanel® in diagnosing certain diseases. A recent consensus report supports the use of markers measured by GastroPanel® to diagnose Helicobacter infection. By contrast, there has been variation in scientific studies on GastroPanel's® ability to differentiate atrophic gastritis. To summarize, in a meta-analysis of scientific studies the combined sensitivity of GastroPanel® was [70% in the atrophic corpus gastritis](#), but the range of sensitivity in the studies was 14-100%. On the other hand, specificity was 90%. The area of the combined ROC (Receiver

Operating Characteristics) was 0.90, which indicates a good atrophic gastritis differentiation. This figure may not be sufficient for making as precise a diagnosis as with gastroscopy but enables using it as a screening tool to indicate the need further examination.

## Biohit's competitive factors

-  Profiling in gastrointestinal tract diagnostics
-  Differentiation of GastroPanel® from competitors with a package that combines 4 tests
-  Utilization of the GastroPanel® brand

## Competitive disadvantages

-  Small resources relative to competitors
-  The sensitivity and specificity of GastroPanel® alone is not sufficient to create as reliable a diagnosis as with gastroscopy, but is suitable for some potential customers as a screening tool to indicate the need further examination.

Source: Inderes

# Strategy and financial targets 1/2

## The pragmatic strategy will be updated shortly

Biohit says it is preparing a new strategy, which is planned to be published in the fall of 2023. Thus, the company's current strategy only applies to this year. Biohit summarizes its strategy in one sentence *“Innovation based customer centric health technology pioneer - profitability as the foundation of business”*.

The company has summarized its strategy in four main priorities. These are: **1) expansions of the marketing network for the main products** – the main markets are China, the EU, the UK, and the Middle East; **2) improving the cost structure of the distribution chain** – streamlining processes by digitizing and automating operations; **3) quality and efficiency**; **4) refining product development** by concentrating resources. The strategy focuses on the same priorities as last year and the company says that it will invest in improving the implementation of the strategy.

The first point of the strategy and its priorities focuses on growth and the remaining three focus mainly on improving profitability and operational efficiency. The implementation of the growth strategy and, in particular, improving profitability seems to have been successful at least in the short term. In 2022, the company managed to grow beyond the pre-COVID pandemic level. At the same time, the sales margin has remained stable, as personnel costs and other operating expenses remain constant or even decrease slightly, which together with lower depreciation has resulted in the EBIT turning positive.

We believe that pursuing growth by focusing on core products and expanding the distribution network, is a clear and low-risk path to growth. We expect that the company should be able to achieve at least satisfactory growth if not good growth in the next few years with this strategy. We do not expect the company to aim for very strong growth with this strategy but we believe Biohit aims for controlled and profitable long-term growth. In our opinion, a failure to do so in the strategy would not lead to significant setbacks but would rather be realized as slower than expected growth.

Making the distribution chain more efficient has been a strategic priority for the company for a few years. Biohit seems to have recognized a clear need to improve the efficiency of its distribution chains and has been working on it for some time. Other priorities related to profitability have been in the strategy since 2022. As with growth, strategic development related to profitability also seems to be closely linked to the company's core business and focuses on improving the company's core processes. We feel the strategic actions to improve profitability will help the company support the scalability of growth. However, we believe that actually increasing EBIT clearly relies on increasing net sales while efficiency improvements support profitability.

The company has added color to its strategy communication in a recent management post. The text describes Biohit as a turnaround company whose first leg of the journey has already been completed, i.e., the earnings

turnaround. The second leg, i.e., scaling up of net sales and earnings has already begun. The third leg is to ensure long-term profitability and is, according to the company, a central part of the future strategy update. In our opinion, the current strategy is lacking longer-term objectives. However, we believe that the upcoming strategy update in the fall will provide clarity on long-term objectives.

## Financial targets

Biohit's guidance for 2023 is that EBIT will grow from EUR 1.1 million last year. The company has not issued longer term guidance nor financial targets. According to the company, the risks of meeting the targets are primarily related to high inflation and a weakening of global economic growth. We believe that the continued increase in costs will challenge Biohit's profitability, but we believe that it is possible to achieve this goal. We consider a decline in global economic growth less of a risk because we estimate that Biohit's net sales is defensive and growth depends more on the company's own performance compared to macroeconomic changes. However, we do not think it is self-evident that the objective will be achieved, as in the comparison period 2022 the company received license income from the contract with Hefei, which significantly supported the EBIT in the comparison period.

# Strategy and financial targets 2/2 - SWOT



## Strengths

- A clear strategy that relies on improving and developing business fundamentals
- Focusing on gastrointestinal tract diagnostics
- Initial indications of successful improvement of operational efficiency
- A strong balance sheet creates support and leeway in the future



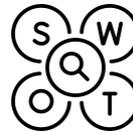
## Weaknesses

- Small resources relative to competitors
- Visibility on the development of net sales and earnings
- A somewhat older product portfolio
- The Acetium® products are located in the consumer segment and we are not entirely convinced of their strategic suitability for the company



## Opportunities

- In the short term, the possibility of achieving sustainable stable profitability
- New product versions of GastroPanel® offer growth opportunities
- In our opinion, the current product portfolio has unrealized additional potential
- Success in product development is key to longer-term success



## Threats

- The aging of the current product portfolio and its loss of competitiveness
- Failure in developing new products
- Dependency on the Chinese market
- The products holding a weak position in distributors' portfolios

# Financial position 1/2

## The result has been in the red but signs of a turnaround can be seen

Biohit increased its net sales mainly supported by pipettes to about EUR 40 million by 2011, when the pipette business was sold. As a result of the divestment, the net sales of the company focused on diagnostics decreased to EUR 2 million, from where it increased to the current EUR 11 million (2013-2022 CAGR 18%). Growth has been continuous, except for the shutoffs during the pandemic, which strongly directed the use of diagnostics to COVID testing and decreased Biohit's net sales in 2020. Last year, net sales exceeded pre-pandemic levels. The business has been mainly loss-making, which we estimate to be caused by low net sales relative to costs, high fixed costs and depreciation. The exit from the Chinese joint venture explains the profit for 2017. Last year, however, EBIT turned positive (1.1 MEUR). We believe the turnaround was based on developed business processes, the renewed distribution agreement in China, and reduced depreciation.

## Cost structure

Biohit's overall cost level has slightly decreased in recent years, despite the growth in net sales. The costs decreased from EUR 11.6 million in 2019 to EUR 10.5 million in 2022. The drop is explained by the decrease in depreciation and other operating expenses. Depreciation decreased by some EUR 1.5 million, when the depreciation of patents related to the sale of the Chinese joint venture ceased in 2021.

Biohit's sales margin has remained stable (except for the pandemic) at around 65%. The relative share of materials and services in costs was 38% in 2022. In recent years, the number of personnel has remained

very stable at 44-46 persons and was 45 at the end of 2022. The relative share of personnel costs was 36%. In our opinion, the company's cost control in recent years is clear in other operating expenses, which have decreased in the last few years and were 20% of net sales last year.

Depreciation has been 17-19% of net sales in recent years but decreased to a low level of 5% in 2022. Biohit has said it will capitalize product development costs in the future in the balance sheet, so depreciation can be expected to grow again over time. In the short term, capitalization would result in a decrease of R&D costs in the income statement and thus an increase in EBIT. However, this would not have a cash flow effect. In the longer term, costs capitalized in the balance sheet increase depreciation when the new developed products enter the market and start to generate net sales. Therefore, increased depreciation has a negative impact on EBIT in the medium term without any cash flow effect.

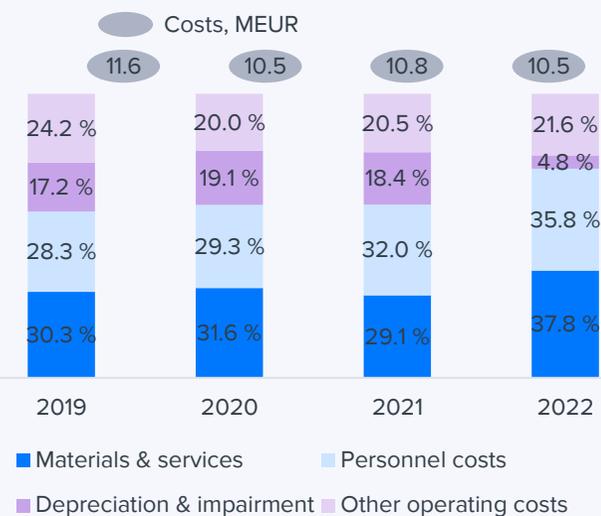
## Cash flow

Biohit's operating cash flow has been close to zero in recent years. Operational cash flow has been better than EBIT due to large depreciation that burdens EBIT. The depreciation of the patent relating to the sale of the joint venture Hefei was approximately EUR 1.5 million per year and ended in 2021.

### Revenue and EBIT, MEUR



### Cost structure, % of operating costs



## Financial position 2/2

In 2022, cash flow turned clearly positive (1.8 MEUR), which is mainly explained by the turnaround in the business – especially increased sales to Hefei and license income.

The change in cash assets in 2022 was EUR 1.0 million positive thanks to the turnaround in operating cash flow. The company has not made significant investments in recent years and changes in cash flow have been relatively small. Cash flow from financing activities has been slightly negative (0.2-0.3 MEUR) in 2019-2022.

### The balance sheet is very strong

The asset side of the balance sheet consists mainly of cash in hand and in banks (6.2 MEUR), which are considerable considering the size and cash flow of the company, giving it plenty of leeway. There is in practice no intangible assets in the balance sheet and tangible assets consist mainly of fixed assets. Biohit has so far treated R&D costs in the income statement. However, we estimate that the company will start to capitalize R&D costs in the balance sheet in the future, so intangible assets and also their depreciation can be expected to grow in the future. The company also had little tangible assets, only EUR 1.1 million. Inventories are EUR 0.9 million or 8.4% of net sales. We find the ratio is at a typical level for the nature and size of the business. Receivables were EUR 2.8 million or 25% of net sales. This figure is at a normal level compared to the company's history, since the relative share of receivables of net sales has been 20-30%.

On the liability side of the balance sheet, equity at the end of 2022 was EUR 7.5 million. Interest-bearing liabilities amounted to EUR 0.9 million, consisting of lease liabilities. Non-interest-bearing liabilities amounted to EUR 2.6 million and consisted mainly of accrued expenses, EUR 1.4 million and trade payables, EUR 0.7 million. The company's equity ratio was 68.7% and a net gearing -69.8% at the end of the year.

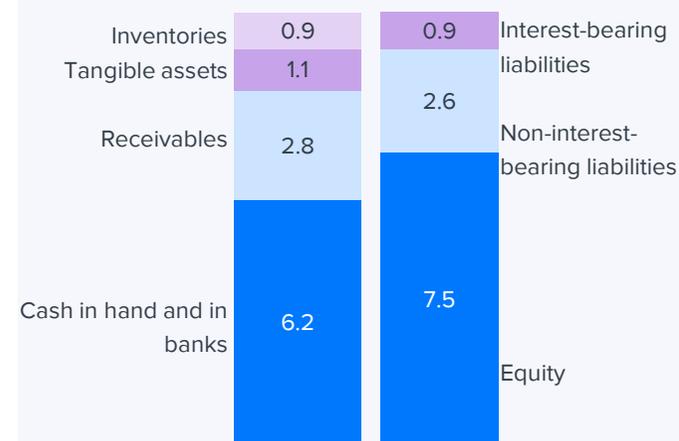
We feel Biohit's balance sheet is very strong. Considering the company's guidance and forecasts, we do not see that investors should be concerned about financial risks in the coming years either. We feel a strong balance sheet enables the company to pay dividends, which the company has not yet done in its history. Biohit has also not announced plans to pay dividends. A strong balance sheet would also allow implementing a relatively large M&A transaction considering the size class of Biohit. Currently, there is little visibility to the company's capital allocation, but we expect Biohit to address this in its forthcoming strategy update this fall.

### Operating cash flow after investments and net result, MEUR



Source: Biohit, Inderes

### Balance sheet 2022, 11 MEUR



Source: Biohit, Inderes

# Estimates 1/3

## Estimate visibility reduces after the next few years

Our estimates are based on three key assumptions: 1) the sale of GastroPanel® products is clearly the key driver of net sales; 2) the new product versions of GastroPanel® and the company focusing on promoting sales will result in faster growth than the market and a sustainable profitability turnaround in the coming years; 3) the company is successful in medium- and long-term product development and thus maintains market-level growth.

We believe that the visibility of the company's business development in the near term is moderate, but decreases rapidly in the medium term. For example, the development of the Chinese market, which is key to the company, is difficult to predict. According to the latest financial statements, Biohit's net sales from Hefei were EUR 4.5 million, or 41% of net sales. Biohit's success in this market depends crucially on the success of its partner, Hefei, and Biohit's own influence on its success on the Chinese market is limited. Biohit reports all of its products as one segment, making it difficult to separate the importance of individual products for the company's current performance. According to the company, the GastroPanel® products are, however, the spearhead products, and the company has also emphasized the importance of Acetium® products.

## We expect moderate growth driven by new GastroPanel® products

Biohit does not provide any net sales guidance or report the net sales of its individual products. Our net sales modeling is based on the overall growth rate of

the market and the assumption that Biohit will grow slightly faster than the market in the coming years, supported by the sales of new GastroPanel® products. We also expect that focusing on sales which the company already started and continues to do will improve operational performance and support net sales in the coming years.

In 2023, we expect net sales to be close to the previous year's level at EUR 11.3 million (+3.2% vs 2022). The growth driver is GastroPanel® sales, which suffered from delivery difficulties in the comparison period according to the company. We expect the delivery difficulties to be receding and support sales. Biohit also stated in its latest financial statement that quick tests had grown by about 30% and we also expect other products to support overall net sales growth.

Our net sales estimate for 2024-2025 is EUR 12.6 and EUR 13.9 million, which corresponds to an annual growth of 12% and 11%. Our estimate is based especially on the assumption that the sales of GastroPanel® quick tests will grow and the company's work to grow and optimize distribution channels. We also expect other quick tests and Acetium® products to support the whole.

## Uncertainties in forecasts



Opportunity

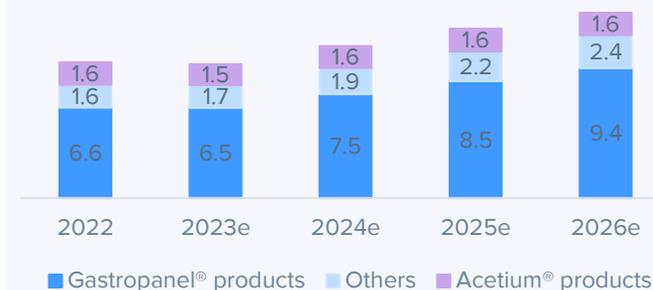


Risk

	Opportunity	Risk
<b>GastroPanel® products</b>	Strong increase in quick tests; Recommendations for using GastroPanel® markers in diagnostics	End of life cycle of the ELISA test; Failure on the Chinese market
<b>Acetium® products</b>	Growing distribution and increasing awareness increase sales; Releasing value by selling the product family	Decline in sales as a result of competition and Biohit's small resources
<b>Others</b>	New products and increased quick test sales	Failure in product development and launches

Source: Inderes

## Revenue development by product group, MEUR



1) Inderes' estimate

# Estimates 2/3

We expect diagnostic products to grow faster than Acetium® products, driven by new GastroPanel® products. In the longer term, we expect net sales growth to be in line with market growth and to gradually slow down to the expected terminal growth of 2.5%. We believe that in the longer term achieving market growth requires that Biohit is successful in product development, which would lead to stable introduction of new and relevant products to the market and thus maintaining the company's product competitiveness.

## The result grows in our estimates supported by net sales and cost control

Our EBIT estimate for 2023 is EUR 1.2 million, which corresponds to a slight growth from the comparison period. Our estimate is largely in line with the company's own guidance, which indicates an improvement in EBIT from EUR 1.1 million last year.

Our estimate is based on expected good net sales development and tight cost control. We feel Biohit has emphasized managing of expectations in its communications and has not created excessive expectations for investors. This increases our confidence in the company's guidance. We feel that assessing the company's cost structure is more reliable than assessing net sales development, so we believe that the decisive factor in our estimates is net sales development. In 2024-2025, we expect EBIT to continue to develop positively supported by net sales growth and continued cost control. Our estimate for 2024 is EUR 1.6 million and EUR 2.1 million for 2025.

We also expect the company to capitalize part of its R&D costs in the balance sheet, which will lower cost levels and increase EBIT in the coming years. However, this does not have a cash flow effect.

## Costs under control

Biohit's sales margin has historically been quite stable, fluctuating around 65%. Exceptionally, the margin decreased due to COVID shutoffs in 2020, when the focus of the diagnostics market shifted strongly to COVID testing, partly at the expense of other diagnostics. We expect the sales margin to remain stable at 65%. The high sales margin is supported by low material costs compared to the sales price and the company's low need for external services. We believe that Biohit's production is relatively efficient and the company cannot significantly improve its sales margin from the current level.

With regard to personnel costs, we expect moderate additional recruitment of one person per year in the coming years. We expect Biohit to recruit new personnel in a fairly moderate degree based on its strategy that emphasizes profitability and our estimate that the company's current capacity is sufficient. Biohit has said that its cost structure is heavy compared to the company's size class due to the industry regulation.

### Revenue and EBIT, MEUR



### Cost development, MEUR



## Estimates 3/3

However, the company expects that in the long term, this personnel resource will also scale to higher net sales, which partly limits recruitment needs. We expect the cost per employee to increase by 3% per year, roughly in line with recent wage agreements. We expect other operating expenses to grow moderately at the level set by recent years by about 6% p.a. Other operating expenses concentrate somewhat seasonally on H2, as has happened in the company's history.

We estimate that depreciation will be lower than historically, as the depreciation linked to Biohit's Chinese patents ceased in H2'21. We expect that the current depreciation level is approximately EUR 0.5 million per year, in line with the 2022 level. In the future, we expect depreciation to increase faster than other costs, especially starting from 2026, when we expect R&D capitalization depreciation to accelerate. On the other hand, increasing depreciation has a decreasing effect on our estimate of increases in other expense lines in the next few years.

### Positive cash flows and a strong balance sheet would enable dividend payments

Biohit's operating cash flow turned clearly profitable in 2022. We believe that this change is partly due to license fees linked to the distribution agreement with Hefei, but also to the improvement in the company's operations. Combined with the company's already strong balance sheet, Biohit has

good preconditions to pay dividends, which we expect in 2024 at a level of EUR 0.05 per share. However, Biohit has not provided guidance on the dividend or indications of dividend distribution in its strategy. Dividend distribution and its development are, therefore, uncertain and depends on the company's future strategic choices and capital allocation.

## Cash flow development, MEUR



# Income statement

Income statement	H1'21	H2'21	2021	H1'22	H2'22	2022	H1'23e	H2'23e	2023e	H1'24e	H2'24e	2024e	2025e	2026e
Revenue	4.0	5.4	9.4	6.1	4.9	11.0	5.8	5.5	11.3	6.4	6.2	12.6	13.9	15.2
EBITDA	-0.2	0.7	0.5	1.5	0.1	1.6	1.1	0.7	1.7	1.3	0.8	2.1	2.6	3.1
Depreciation	-1.0	-1.0	-2.0	-0.2	-0.3	-0.5	-0.3	-0.3	-0.5	-0.3	-0.3	-0.5	-0.5	-0.8
EBIT (excl. NRI)	-1.2	-0.3	-1.5	1.3	-0.2	1.1	0.8	0.4	1.2	1.0	0.5	1.6	2.1	2.3
EBIT	-1.2	-0.3	-1.5	1.3	-0.2	1.1	0.8	0.4	1.2	1.0	0.5	1.6	2.1	2.3
Net financial items	0.0	0.2	0.2	-0.2	-0.1	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PTP	-1.2	-0.1	-1.3	1.1	-0.2	0.9	0.8	0.4	1.2	1.0	0.5	1.6	2.1	2.3
Taxes	0.0	-0.2	-0.2	-0.2	-0.1	-0.3	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.4	-0.5
Net earnings	-1.2	-0.3	-1.5	0.9	-0.3	0.6	0.7	0.3	1.0	0.9	0.4	1.4	1.7	1.8
EPS (rep.)	-0.08	-0.02	-0.10	0.06	-0.02	0.04	0.05	0.02	0.07	0.06	0.03	0.09	0.11	0.12

Key figures	H1'21	H2'21	2021	H1'22	H2'22	2022	H1'23e	H2'23e	2023e	H1'24e	H2'24e	2024e	2025e	2026e
Revenue growth-%		-24.7 %	31.4 %	52.5 %	-9.5 %	17.0 %	-4.9 %	13.4 %	3.2 %	10.0 %	13.0 %	11.5 %	10.5 %	9.5 %
Adjusted EBIT growth-%		-91.2 %	-53.4 %	-208.3 %	-38.6 %	-176.2 %	-37.7 %	-345.5 %	9.2 %	28.2 %	25.1 %	27.1 %	34.3 %	8.2 %
EBITDA-%	-5.0 %	13.2 %	5.4 %	24.6 %	2.2 %	14.7 %	18.3 %	12.2 %	15.3 %	20.2 %	12.6 %	16.5 %	18.5 %	20.3 %
Adjusted EBIT-%	-30.0 %	-5.2 %	-15.8 %	21.3 %	-3.5 %	10.3 %	14.0 %	7.7 %	10.9 %	16.3 %	8.5 %	12.4 %	15.1 %	14.9 %
Net earnings-%	-30.0 %	-5.6 %	-16.0 %	14.8 %	-6.2 %	5.5 %	12.2 %	5.9 %	9.1 %	14.7 %	6.9 %	10.8 %	12.1 %	11.9 %

Source: Inderes

# Balance sheet

Assets	2021	2022	2023e	2024e	2025e
<b>Non-current assets</b>	<b>0.6</b>	<b>1.1</b>	<b>1.3</b>	<b>1.8</b>	<b>2.4</b>
Goodwill	0.0	0.0	0.0	0.0	0.0
Intangible assets	0.1	0.0	0.1	0.4	1.0
Tangible assets	0.4	1.0	1.1	1.3	1.3
Associated companies	0.0	0.0	0.0	0.0	0.0
Other investments	0.1	0.1	0.1	0.1	0.1
Other non-current assets	0.0	0.0	0.0	0.0	0.0
Deferred tax assets	0.0	0.0	0.0	0.0	0.0
<b>Current assets</b>	<b>9.0</b>	<b>9.9</b>	<b>10.4</b>	<b>11.5</b>	<b>12.0</b>
Inventories	0.8	0.9	0.9	0.9	1.0
Other current assets	0.0	0.0	0.0	0.0	0.0
Receivables	2.7	2.8	2.7	2.8	2.8
Cash and equivalents	5.5	6.2	6.8	7.7	8.2
<b>Balance sheet total</b>	<b>9.6</b>	<b>11.0</b>	<b>11.7</b>	<b>13.3</b>	<b>14.3</b>

Source: Inderes

Liabilities & equity	2021	2022	2023e	2024e	2025e
<b>Equity</b>	<b>7.4</b>	<b>7.6</b>	<b>8.6</b>	<b>10.0</b>	<b>10.9</b>
Share capital	2.4	2.4	2.4	2.4	2.4
Retained earnings	1.0	1.8	2.8	4.2	5.1
Hybrid bonds	0.0	0.0	0.0	0.0	0.0
Revaluation reserve	-1.1	-1.7	-1.7	-1.7	-1.7
Other equity	5.1	5.1	5.1	5.1	5.1
Minorities	0.0	0.0	0.0	0.0	0.0
<b>Non-current liabilities</b>	<b>0.1</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>
Deferred tax liabilities	0.0	0.0	0.0	0.0	0.0
Provisions	-0.1	-0.1	-0.1	-0.1	-0.1
Long term debt	0.2	0.7	0.7	0.7	0.8
Convertibles	0.0	0.0	0.0	0.0	0.0
Other long term liabilities	0.0	0.0	0.0	0.0	0.0
<b>Current liabilities</b>	<b>2.1</b>	<b>2.9</b>	<b>2.5</b>	<b>2.7</b>	<b>2.8</b>
Short term debt	0.0	0.3	0.3	0.3	0.3
Payables	2.1	2.6	2.3	2.4	2.5
Other current liabilities	0.0	0.0	0.0	0.0	0.0
<b>Balance sheet total</b>	<b>9.6</b>	<b>11.0</b>	<b>11.7</b>	<b>13.3</b>	<b>14.3</b>

# Valuation and recommendation 1/3

## Valuation relies on earnings multiples and cash flow calculation

According to our estimates, Biohit's value creation is in the short term based on the earnings improvement from better operational efficiency and the growth from GastroPanel® quick tests, as well as the distribution agreement in China. In the longer term, value creation relies not only on sales growth of current products, but also on the success of product development and commercialization of new products. In the short term, we feel visibility to Biohit's business development is moderate based on the defensive nature of the business and a stable product portfolio, which is also reflected in the reliability of the valuation. In the medium term, visibility decreases and the margin of error of the valuation increases as future growth relies more on new product launches to which there is no visibility yet. In terms of methodology, our valuation is primarily based on earnings multiples supported by the revenue-based EV/S ratio and the DCF calculation.

## Earnings multiples are moderate considering growth and profitability potential

Biohit's P/E ratios are 26x and 20x for 2023-2024. However, we believe that the company's valuation is better described by the EV/EBIT ratio that considers the large net cash. The 2023 EV/EBIT ratio is 17x and the 2024 ratio is 12x. The multiples continue to fall rapidly in the coming years, although the lack of visibility means that the reliability of the estimates suffer when assessing the longer term.

Therefore, we rely mainly on 2023-2024 multiples in our examination. We consider the multiples cautiously favorable considering the growth rate we expect, defensive demand, and the medium-term potential for improving profitability. The profitability potential is indicated by the EBIT margin of mature diagnostic companies in 2022 of 17.1% (Bloomberg Global In Vitro Diagnostic Competitors Index companies). The company's own historical multiples cannot be compared because of the loss-making business.

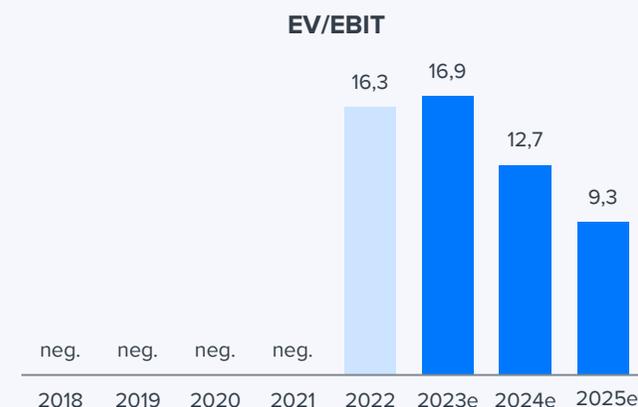
## Multiples are favorable compared to peers in a more mature development phase

It is difficult to find fully suitable listed companies to use as peer companies to support Biohit's valuation. Nordic diagnostic test companies are mainly either in an R&D phase or in an early commercialization phase. Thus, the companies are loss-making or have no net sales yet. The 2023 EV/EBIT ratios of large international diagnostic companies (Abbott, Biomerieux, Bio-Rad, DiaSorin and Qiagen) are 18-22x and 16-21x for 2024. Thus, Biohit's ratios for 2023 are a bit below the bottom end of the multiples range for the peers and with our 2024 estimates the multiples fall some 30% below the average of the multiple range. Compared to Biohit, the business of the peers is clearly larger, more stable, more predictable, and, at least for the time being, more profitable. That is why we believe that Biohit's multiples should be below the peers. In our view, the discount is rather high in 2024, which is an indication of Biohit's cautiously attractive pricing.

## Summary of key figures

Valuation	2023e	2024e	2025e
Share price	1.78	1.78	1.78
Number of shares, millions	15.0	15.0	15.0
Market cap	27	27	27
EV	21	20	20
P/E (adj.)	25.9	19.5	15.9
P/E	25.9	19.5	15.9
P/FCF	47.2	29.8	22.9
P/B	3.1	2.7	2.5
P/S	2.4	2.1	1.9
EV/Sales	1.8	1.6	1.4
EV/EBITDA	12.0	9.6	7.6
EV/EBIT (adj.)	16.9	12.7	9.3
Payout ratio (%)	0.0 %	55.1 %	53.6 %
Dividend yield-%	0.0 %	2.8 %	3.4 %

Source: Inderes



# Valuation and recommendation 2/3

## On revenue basis, the share is cheap compared to history and the peers

Biohit's revenue-based EV/S ratio for 2023 is 1.8x and will fall to 1.6x in 2024. The ratios are well below the company's own recent history with the median for 2018-2022 being 3.6x. Pricing relative to the company's own history is favorable, especially in view of the emergent turnaround. The ratios for the larger and more mature peers mentioned in the previous paragraph (Abbott, Biomerieux, Bio-Rad, DiaSorin and Qiagen) are 3.0x-5.2x for 2023 and 2.9x-4.9x for 2024.

We also examine the EV/S ratio relative to the long-term valuation of large peers. The median EV/S ratios of Bloomberg Global in vitro Diagnostic index over the last decade is 3.0x and 3.2x based on the latest financial statements from 2022. We note that the available data is based on the net sales of the previous 12 months, so the multiples based on our estimates are not entirely comparable. We estimate that Biohit has stronger growth conditions than its more mature peers due to its development phase and, if the earnings turnaround succeeds, a fairly comparable performance. In spite of our good growth estimates, we feel Biohit deserves slightly lower multiples than the peers as it is a small turnaround company. However, we believe that the current discount represents an unjustifiably high discount and thus the share's attractive revenue-based pricing.

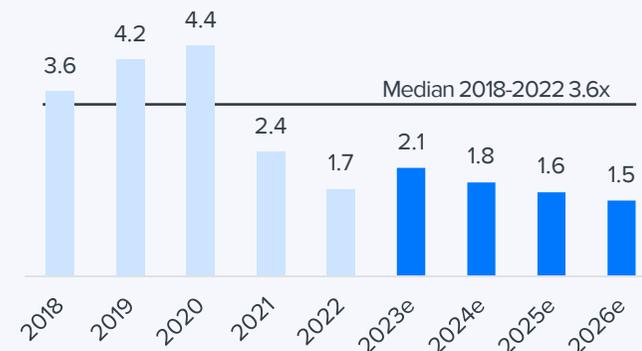
## Cash flow calculation indicates a reasonable upside

Based on the DCF model the current per share value of future cash flows is EUR 2.2 and indicates a reasonable upside in the share price. Our terminal growth assumption is 2.5%, based on the growth outlook of the health care needs of the aging population. In the terminal, we expect the EBIT to be 20%. We have used a weighted average cost of capital (WACC) of 10.5%. WACC is elevated by the risks related to the materialization of the estimates and the aging product portfolio. On the other hand, a strong balance sheet, preliminary indications of a turnaround and defensiveness of the industry lower the WACC.

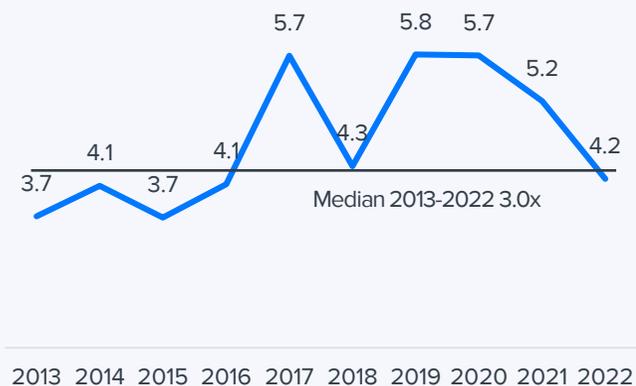
The effect of estimated 2023-2027 cash flows on the present value of the share is 15%. With the growth in net sales and the expected profitability improvement, by 2028-2032 cash flows account for 26% of the present value. Terminal cash flows projected beyond 2032 represent 59% of the present value.

The sensitivity of the share value to the WACC used is, in our view, at an average level due to the modest weighting of the estimated cash flows in the terminal period. We do not see any events that would create significant pressure to change the WACC level, such as share issues or sales authorizations for key products.

EV/S ratio



EV/S ratio<sup>1</sup>



<sup>1</sup> EV/S ratio of Bloomberg Global In Vitro Diagnostics companies (TTM).

# Valuation and recommendation 3/3

## Valuation summary

Our view on the fair value of Biohit's share is EUR 1.5-2.5, which corresponds to a 2023 EV/EBIT range of 14x-26x and an EV/S range of 1.5x-2.8x. Earnings and revenue multiples play a key role in our view and they indicate that the share is modestly valued relative to earnings and net sales growth. We feel that the discount to the peers and the company's own history is relatively high, although the peer group we use does not correspond particularly well with Biohit. The DCF model also indicates an upside in the share and meets our required return.

We believe that the return on the share consists of price changes and dividend yield. The price drivers for the share are the growth driven by the GastroPanel® quick tests and improving operational efficiency, which we expect to result in healthy earnings growth in the coming years. In the medium term, the estimate risk for earnings growth increases significantly as visibility decreases.

We expect the dividend yield to be about 3% in the next few years. We base our dividend expectations on the company's strong balance sheet, our positive cash flow estimate and the company's modest investment needs. However, the company has not provided guidance on dividend distribution, so its materialization is highly uncertain. Capital allocation to inorganic growth is also a possible alternative to dividend distribution.

We believe that Biohit's valuation multiples can fluctuate strongly in the market. At the moment, we believe that the risk associated with the valuation

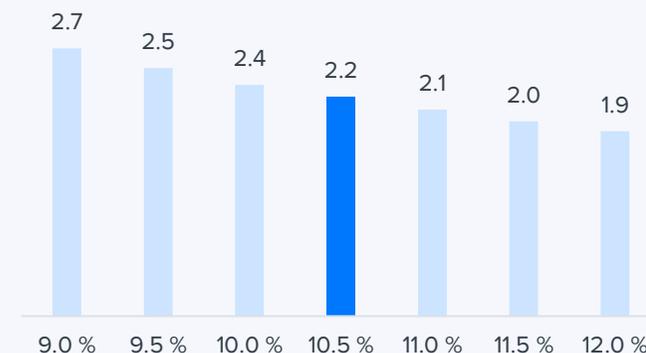
multiples offers a slightly higher probability of the multiples stretching than decreasing. Of course, the stock returns generated by the possible stretching of multiples becomes less likely if the company is successful in growth and a more sustained earnings turnaround. Similarly, failure to grow and turning earnings around would expose the investor to falling multiples and could weaken stock returns considerably.

## We initiate coverage with an Accumulate recommendation

We initiate coverage with an Accumulate recommendation and a target price of EUR 2.1. Our recommendation is based on our view of earnings growth in the coming years and the dividend distribution we expect starting next year. We, therefore, feel the current share price of EUR 1.8 represents a cautiously attractive pricing, with which our required return is exceeded.

The business risk is set to level 3 in our assessment. The risk profile is reduced by the defensiveness of the business, the strong balance sheet, and positive cash flows. The risk is, in turn, raised, by the company's small size in relation to its competitors, so far preliminary evidence of the turnaround, and poor visibility to future development. The share is suitable for an investor seeking defensive growth that is interested in health technology.

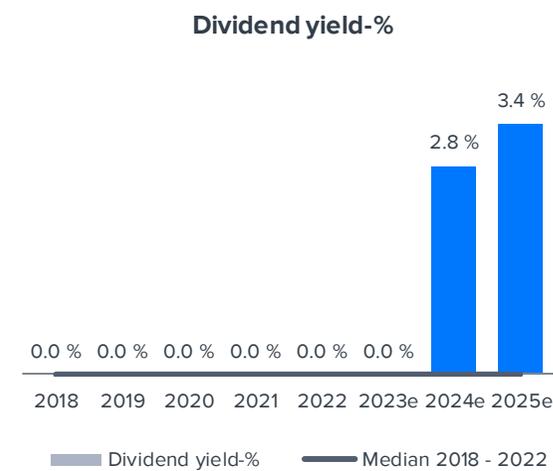
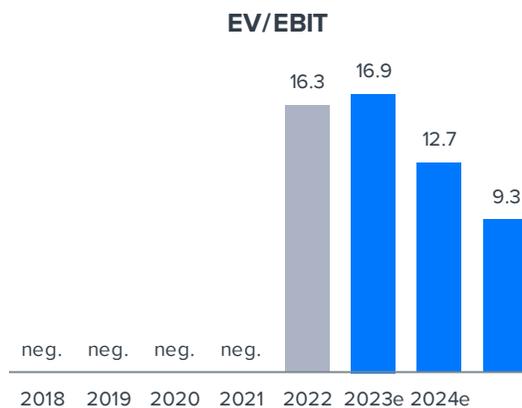
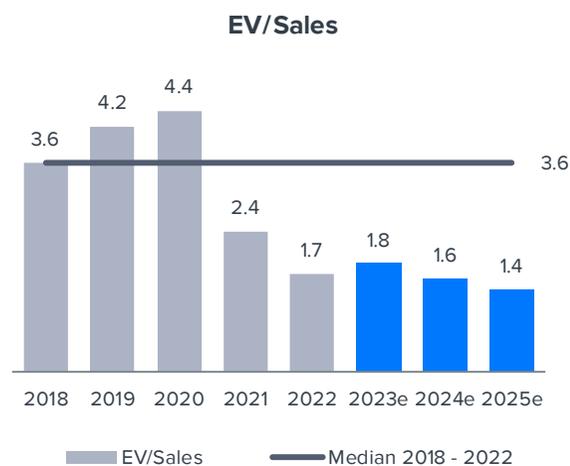
Sensitivity of DCF value to WACC, EUR/share



# Valuation table

Valuation	2018	2019	2020	2021	2022	2023e	2024e	2025e	2026e
Share price	2.96	3.36	2.48	1.84	1.57	1.78	1.78	1.78	1.78
Number of shares, millions	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Market cap	44	51	37	28	24	27	27	27	27
EV	35	42	32	22	18	21	20	20	19
P/E (adj.)	neg.	neg.	neg.	neg.	39.3	25.9	19.5	15.9	14.7
P/E	neg.	neg.	neg.	neg.	39.3	25.9	19.5	15.9	14.7
P/FCF	neg.	neg.	neg.	neg.	42.0	47.2	29.8	22.9	21.4
P/B	2.8	3.4	4.2	3.8	3.1	3.1	2.7	2.5	2.3
P/S	4.5	5.0	5.2	3.0	2.2	2.4	2.1	1.9	1.8
EV/Sales	3.6	4.2	4.4	2.4	1.7	1.8	1.6	1.4	1.3
EV/EBITDA	neg.	70.5	neg.	44.0	11.4	12.0	9.6	7.6	6.2
EV/EBIT (adj.)	neg.	neg.	neg.	neg.	16.3	16.9	12.7	9.3	8.4
Payout ratio (%)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	55.1 %	53.6 %	57.9 %
Dividend yield-%	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	2.8 %	3.4 %	3.9 %

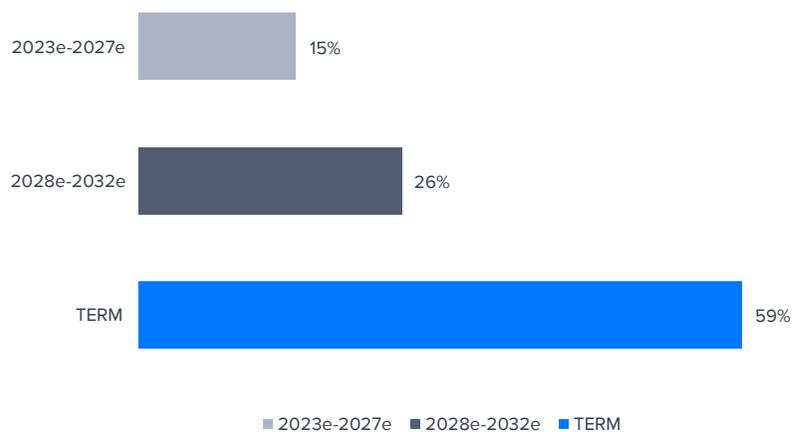
Source: Inderes



# DCF calculation

DCF model	2022	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	TERM
Revenue growth-%	17.0 %	3.2 %	11.5 %	10.5 %	9.5 %	8.5 %	8.5 %	7.0 %	5.0 %	4.0 %	2.5 %	2.5 %
EBIT-%	10.3 %	10.9 %	12.4 %	15.1 %	14.9 %	18.0 %	20.0 %	22.0 %	22.0 %	20.0 %	20.0 %	20.0 %
<b>EBIT (operating profit)</b>	<b>1.1</b>	<b>1.2</b>	<b>1.6</b>	<b>2.1</b>	<b>2.3</b>	<b>3.0</b>	<b>3.6</b>	<b>4.2</b>	<b>4.4</b>	<b>4.2</b>	<b>4.3</b>	
+ Depreciation	0.5	0.5	0.5	0.5	0.8	1.1	1.2	1.2	1.3	1.3	1.4	
- Paid taxes	-0.3	-0.2	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.8	-0.9	
- Tax, financial expenses	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
+ Tax, financial income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
- Change in working capital	0.3	-0.3	0.0	0.1	-0.3	-0.3	-0.3	-0.3	-0.1	-0.1	-0.1	
<b>Operating cash flow</b>	<b>1.6</b>	<b>1.3</b>	<b>1.9</b>	<b>2.2</b>	<b>2.4</b>	<b>3.1</b>	<b>3.8</b>	<b>4.3</b>	<b>4.7</b>	<b>4.6</b>	<b>4.7</b>	
+ Change in other long-term liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
- Gross CAPEX	-1.0	-0.7	-1.0	-1.1	-1.1	-1.2	-1.2	-1.3	-1.4	-1.4	-1.4	
<b>Free operating cash flow</b>	<b>0.6</b>	<b>0.6</b>	<b>0.9</b>	<b>1.2</b>	<b>1.2</b>	<b>2.0</b>	<b>2.5</b>	<b>3.0</b>	<b>3.3</b>	<b>3.1</b>	<b>3.3</b>	
+/- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
FCFF	0.6	0.6	0.9	1.2	1.2	2.0	2.5	3.0	3.3	3.1	3.3	42.9
<b>Discounted FCFF</b>		<b>0.5</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.3</b>	<b>1.3</b>	<b>16.6</b>
Sum of FCFF present value		28.2	27.7	26.9	26.0	25.1	23.9	22.4	20.9	19.3	17.9	16.6
<b>Enterprise value DCF</b>		<b>28.2</b>										
- Interest bearing debt		-0.9										
+ Cash and cash equivalents		6.2										
-Minorities		0.0										
-Dividend/capital return		0.0										
<b>Equity value DCF</b>		<b>33.5</b>										
<b>Equity value DCF per share</b>		<b>2.2</b>										

Cash flow distribution



## WACC

Tax-% (WACC)	20.0 %
Target debt ratio (D/(D+E))	10.0 %
Cost of debt	6.0 %
Equity Beta	1.60
Market risk premium	4.75%
Liquidity premium	1.00%
Risk free interest rate	2.5 %
<b>Cost of equity</b>	<b>11.1 %</b>
<b>Weighted average cost of capital (WACC)</b>	<b>10.5 %</b>

Source: Inderes

# Summary

Income statement	2020	2021	2022	2023e	2024e	Per share data	2020	2021	2022	2023e	2024e
Revenue	7.1	9.4	11.0	<b>11.3</b>	<b>12.6</b>	EPS (reported)	-0.22	-0.10	0.04	<b>0.07</b>	<b>0.09</b>
EBITDA	-1.2	0.5	1.6	<b>1.7</b>	<b>2.1</b>	EPS (adj.)	-0.22	-0.10	0.04	<b>0.07</b>	<b>0.09</b>
EBIT	-3.2	-1.5	1.1	<b>1.2</b>	<b>1.6</b>	OCF / share	0.00	-0.03	0.10	<b>0.08</b>	<b>0.13</b>
PTP	-3.3	-1.3	0.9	<b>1.2</b>	<b>1.6</b>	FCF / share	-0.02	-0.04	0.04	<b>0.04</b>	<b>0.06</b>
Net Income	-3.3	-1.5	0.6	<b>1.0</b>	<b>1.4</b>	Book value / share	0.58	0.49	0.50	<b>0.57</b>	<b>0.66</b>
Extraordinary items	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>	Dividend / share	0.00	0.00	0.00	<b>0.00</b>	<b>0.05</b>
Balance sheet	2020	2021	2022	2023e	2024e	Growth and profitability	2020	2021	2022	2023e	2024e
Balance sheet total	10.8	9.6	11.0	<b>11.7</b>	<b>13.3</b>	Revenue growth-%	-29%	31%	17%	<b>3%</b>	<b>11%</b>
Equity capital	8.8	7.4	7.6	<b>8.6</b>	<b>10.0</b>	EBITDA growth-%	-298%	-143%	217%	<b>8%</b>	<b>20%</b>
Goodwill	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>	EBIT (adj.) growth-%	125%	-53%	-176%	<b>9%</b>	<b>27%</b>
Net debt	-5.7	-5.3	-5.3	<b>-5.8</b>	<b>-6.7</b>	EPS (adj.) growth-%	134%	-55%	-140%	<b>72%</b>	<b>32%</b>
Cash flow	2020	2021	2022	2023e	2024e	EBITDA-%	-16.5 %	5.4 %	14.7 %	<b>15.3 %</b>	<b>16.5 %</b>
EBITDA	-1.2	0.5	1.6	<b>1.7</b>	<b>2.1</b>	EBIT (adj.)-%	-44.6 %	-15.8 %	10.3 %	<b>10.9 %</b>	<b>12.4 %</b>
Change in working capital	1.2	-0.8	0.3	<b>-0.3</b>	<b>0.0</b>	EBIT-%	-44.6 %	-15.8 %	10.3 %	<b>10.9 %</b>	<b>12.4 %</b>
Operating cash flow	0.0	-0.5	1.6	<b>1.3</b>	<b>1.9</b>	ROE-%	-28.3 %	-18.5 %	8.0 %	<b>12.8 %</b>	<b>14.7 %</b>
CAPEX	-0.3	-0.1	-1.0	<b>-0.7</b>	<b>-1.0</b>	ROI-%	-25.9 %	-17.7 %	14.3 %	<b>13.8 %</b>	<b>15.5 %</b>
Free cash flow	-0.3	-0.6	0.6	<b>0.6</b>	<b>0.9</b>	Equity ratio	81.6 %	76.7 %	68.7 %	<b>73.4 %</b>	<b>75.2 %</b>
Valuation multiples	2020	2021	2022	2023e	2024e	Gearing	-64.7 %	-72.4 %	-69.8 %	<b>-68.0 %</b>	<b>-67.7 %</b>
EV/S	4.4	2.4	1.7	<b>1.8</b>	<b>1.6</b>						
EV/EBITDA (adj.)	neg.	44.0	11.4	<b>12.0</b>	<b>9.6</b>						
EV/EBIT (adj.)	neg.	neg.	16.3	<b>16.9</b>	<b>12.7</b>						
P/E (adj.)	neg.	neg.	39.3	<b>25.9</b>	<b>19.5</b>						
P/B	4.2	3.8	3.1	<b>3.1</b>	<b>2.7</b>						
Dividend-%	0.0 %	0.0 %	0.0 %	<b>0.0 %</b>	<b>2.8 %</b>						

Source: Inderes

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## Recommendation history (>12 mo)

Date	Recommendation	Target	Share price
6/30/2023	Accumulate	2.10 €	1.78 €



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### Inderes Oyj

Itämerentori 2

FI-00180 Helsinki, Finland

+358 10 219 4690

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